BODIES IN MOTION FOR LIFE: A LONG-TERM QUALITATIVE EVALUATION OF AN ED PREVENTION PROGRAM WITH RETIRED FEMALE ATHLETES

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Female collegiate athletes have been identified as a group at risk of developing eating disorders (EDs) and unhealthy weight control behaviors. Interventions grounded in cognitive dissonance theory and those that incorporate mindfulness-based interventions have shown improved body image and reductions in internalization and ED symptomatology over time in female non-athletes. However, few studies have examined the efficacy of intervention programs among female athletes, and, despite early promising results, previous research has been limited in several ways (e.g., methodology, small sample size). The purpose of this study was to conduct a long-term (i.e., three years) qualitative follow-up evaluation of Bodies in Motion (BIM), an ED prevention program developed specifically to acknowledge the unique experience and needs of female athletes with respect to their bodies as women and athletes. Results indicate that, similar to their initial experiences, now-retired athletes reported increased awareness of sport and societal messages and their impact on body image, shifted perspectives in their view of themselves and their bodies, and ongoing use of skills to manage body image in their lives. Further, with the passage of time, athletes continued to report a positive experience in the program and the utility of Bodies in Motion as they navigated challenging life transitions. These results indicate that the Bodies in Motion program has long-term benefits for female collegiate athletes consistent with program aims, even as athletes transition out of their sports.

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Introduction

Sociocultural perspectives on eating disorder (ED) etiology (e.g., Ata et al., 2015; Stice et al., 2011) suggest that exposure to appearance-related pressures that emanate from various sources (e.g., media, social media, parents, peers) are central to heightened risk. When individuals, women particularly, are consistently exposed to such socially constructed appearance ideals (e.g., flat stomach, thin waist, some muscular definition, well-developed breasts, flawless skin; Calogero et al., 2007), they can internalize them, creating a standard to which they continually and consistently compare their own bodies (e.g., Polivy & Herman, 2002). Because these societal appearance ideals are largely unattainable for most women, the result is increased body dissatisfaction, and, for some, increased negative affect and/or dietary restraint and the development of ED symptoms (e.g., Keel & Forney, 2013; Puccio et al., 2016; Schaefer & Thompson, 2018). Among women in general, prevalence rates for body dissatisfaction range from 20% to 40% (Frederick et al., 2012), while the prevalence of clinical EDs (e.g., anorexia nervosa, bulimia nervosa, binge-eating disorder) ranges from 0.8% to 14.2% (Smink et al., 2014; Stice et al., 2013); rates of subclinical EDs are even higher, ranging from 37.9% to 51.2% (Barrack et al., 2019; Cohen & Petrie, 2005).

Due to the presence of both sport and societal body- and appearance-related pressures, female collegiate athletes are a subset of women that have been identified as at increased risk of developing EDs and unhealthy weight control behaviors (Byrne & McLean, 2002; Greenleaf et al., 2009; Petrie & Greenleaf, 2007). Prevalence rates for clinical and subclinical EDs have been quite variable, generally due to the use of questionnaires that were not intended to provide cut-

off scores for such classifications. However, studies that have relied on either validated self-report measures, or used structured clinical interviews, do exist and provide useful information on female athlete prevalence. Based on such studies, rates for clinical EDs (using DSM-IV criteria) have ranged from 2.0% to 5.7% (Anderson & Petrie, 2012, Bratland-Sanda & Sundgot-Borgen, 2013; Greenleaf, et al., 2009; Greenleaf et al., 2009; Toro et al., 2005); subclinical EDs' rates are higher and have ranged from 6.5%% to 28.9% (e.g., Anderson & Petrie, 2012; DiPasquale & Petrie, 2013; Greenleaf et al., 2009; Petrie et al., 2009b). Taken together, the statistical landscape of prevalence for body dissatisfaction and disordered eating, paired with the consistent exposure to and ubiquity of societal messages proclaiming body and beauty standards, necessitates a comprehensive understanding ED risk among female athletes.

In explaining female athletes' risk, researchers (Petrie & Greenleaf, 2007, 2012) have acknowledged the influence of general sociocultural pressures, but have argued that there are additional body, weight, and appearance-related ideals and expectations specific to the sport-environment (e.g., revealing uniforms, mandatory weigh-ins, messages from coaches about physical size; Thompson & Sherman, 2010) that contribute to, and perhaps are more important than, the general sociocultural pressures in explaining their body image concerns and ED symptoms.

Further, unlike general sociocultural pressures, whose influence on body image and ultimately ED symptoms is mediated through internalization processes, the effects of sport-specific pressures may be more direct. In a cross-sectional study of over 400 female collegiate athletes, Anderson et al. (2011) found support for this perspective. Specifically, sociocultural pressures were related directly only to the athletes' level of internalization; their continuing effects on body satisfaction were indirect. However, sport-specific pressures were related

directly to body dissatisfaction and dietary restraint (and indirectly to negative affect and bulimic symptomatology). The importance of sport-specific pressures has also been established in longitudinal research. Anderson et al. (2012) evaluated the relationships among sport pressures, body satisfaction, and dietary restraint across a 5-month competitive season, finding that sport pressures predicted increases in the female athletes' body dissatisfaction over time, even after controlling for initial levels of dissatisfaction.

Given the theoretical and empirical evidence linking sociocultural variables (e.g., pressures, internalization) to body image concerns and ultimately ED symptoms, researchers have developed interventions that target these "upstream" variables (e.g., experience of pressures, internalization) to improve the "downstream" ones, such as body image and ED symptoms. Over time, researchers have shown that effective ED prevention programs are primary (i.e., intervening before negative health outcomes occur), selective, interactive, experiential, multi-session, gender-matched, group-based, and facilitated by professionals (e.g., Bar et al., 2016; Becker & Stice, 2017; Stice et al., 2007). Further, such interventions are typically grounded in cognitive dissonance theory (Festinger, 1957), which helps participants challenge these sociocultural messages regarding beauty by engaging in activities in which they critique these ideals. By thinking, and behaving, in ways that run counter to these appearance ideals, participants are expected to experience psychological discomfort (i.e., dissonance) that leads to less internalization; that is, they become less attached to (or believing in) these societally-based ideas of appearance, body, femininity, eating, etc. As their internalization of these ideals decreases, subsequent improvements in body image, negative affect, dieting, and disordered eating follow (Stice et al., 2009). Although there is extensive empirical support for these dissonance-based interventions, particularly for female adolescents and young adults (Stice

et al., 2007; Stice et al., 2019; Stice & Shaw, 2004), the actual changes in the measured constructs (e.g., internalization, body satisfaction) have been only small to moderate (Stice et al., 2019). This reality has led researchers to suggest that dissonance-based interventions need to be expanded to include other viable psychological strategies to expand their effectiveness. For example, mindfulness-based interventions have been developed and tested in female non-athlete samples with promising results for ED prevention (Atkinson & Wade, 2015), and could be one such strategy integrated into dissonance-based programs for even greater effect.

Although ED prevention has been extensively studied within nonathlete samples (e.g., Atkinson & Wade, 2016; de Oliveira Coelho et al., 2014; Pennesi & Wade, 2018; Stice et al., 2014; Stice et al., 2019), fewer studies have been conducted with female athletes, particularly at the collegiate level (Abood & Black, 2000; Becker et al., 2012; Martinsen et al., 2014; Smith & Petrie, 2008; Torres-McGehee et al., 2011). For example, Becker et al. (2012) found reductions in female collegiate athletes' thin-ideal internalization, dietary restraint, bulimic symptomatology, shape and weight concerns (i.e., body dissatisfaction), and negative affect six weeks following a 3-session dissonance-based ED prevention program. Further, the reductions in bulimic symptomatology, shape concern, and negative affect were maintained at 1-year follow-up, though effect sizes were only small to moderate. Although promising, the Becker et al. (2012) study had several limitations, including the use of within-sport groups (as opposed to mixed-sport), absence of a wait-list control group for comparison, and participants having been drawn from a single Division III athletics program.

Addressing the limitations of past ED prevention programs, as well as the recommendation by Arthur-Cameselle et al. (2017) that athlete ED prevention programs address body duality (i.e., feminine ideal body contrasted with the athletic ideal body; Krane et al.,

2004), Voelker et al. (2019) developed Bodies in Motion (BIM) to focus on the unique experiences of female athletes. Through the program, which is facilitated by women in the sport environment (e.g., sport psychology consultant, dietitian), female athletes are introduced to psychological strategies, tools, and perspectives to help them respond to ubiquitous pressures (i.e., general sociocultural, sport-specific) in healthier and more functional ways, and ultimately develop a positive body image and increased appreciation for and satisfaction with the appearance and functionality of their bodies as both athletes and as women. Grounded in cognitive dissonance theory (Festinger, 1957), as well as mindful self-compassion (Neff, 2003a; 2003b; Germer, 2009), female athletes are given opportunities to actively and experientially challenge societal appearance standards with one another, while also addressing body, appearance, and performance standards that exist within the sport environment. Applying mindful self-compassion tools and perspectives, athletes learn how to become more present-focused and aware, nonjudgmental of their internal reactions (e.g., thoughts, feelings), and kind and compassionate towards themselves (as opposed to self-critical) when exposed to appearance messages. BIM also incorporates the positive elements of social media, specifically providing athletes with the opportunity to interact with each other at any point, offer support as they practice the strategies taught in each session, contribute content that challenges societal beauty standards and affirms their current bodies as athletes and women, and promote a culture of body acceptance that goes beyond the time spent in session (Korda & Itani, 2013).

To evaluate the BIM program, Voelker et al. (2019) recruited female athletes across nine NCAA athletic departments; 57 athletes participated in the intervention whereas 40 served as wait-list controls. Intervention groups were run by extant professionals within each athletic department (e.g., sport psychologist, sport nutritionist) who had been trained in the BIM program

and who followed the standardized protocol. Athletes completed measures of sport-specific body pressures, general sociocultural pressures, internalization, body attitudes (i.e., body satisfaction), affect, eating concerns, mindfulness, and self-compassion at pre- and post-intervention, and again during a 3-4-month follow-up. Through a series of repeated measures analyses, Voelker et al. (2019) found that the intervention group athletes, but not the control, experienced significant reductions in internalization through the 3-4 month follow-up; they also noted differences in response trajectories (in the expected directions) across the two groups for body appreciation, body satisfaction, shape and weight concerns, bulimic symptomatology, negative affect, muscular-ideal internalization, positive affect, and sport-specific body pressures. Their findings provided support for the efficacy of the BIM program in helping female collegiate athletes develop psychological tools to separate themselves from body and appearance ideals, and engage with themselves in more positive, satisfying, and kind ways.

In a second study, Voelker et al. (2020) examined qualitative responses from the athletes who had participated in the intervention. At post-intervention, these athletes responded to two open-ended questions: (1) "What are the two most meaningful things you have learned from your participation in the Bodies in Motion program?" and (2) "What are the two most important ways you see your body differently after having participated in the Bodies in Motion program?" At the 3-4-month follow-up, these participants were asked, "In what ways has the Bodies in Motion program affected the way you view your body and yourself as an athlete and as a woman over the past several months (since the program ended)?" Voelker et al. (2020) examined the open-ended responses across the two time-points using thematic analysis with a social constructivist lens. They identified three overarching themes—becoming aware, changing attitudes toward self and body, and developing new skills and ways of relating to the self—that existed across the two

time points. Within the three themes, 12 subthemes emerged. For example, the subthemes of 'becoming aware' consisted of recognizing the value of body functionality (versus appearance), recognizing the community of other women available for support (i.e., "I am not alone"), recognizing that beauty is socially constructed and communicated, and recognizing the magnitude of their own self-criticism. These findings suggest that the program was effective for influencing how athletes view themselves and their bodies, changing the athletes' attitudes toward their body to increase acceptance of and gratitude for their bodies, and providing new psychological skills to relate more positively to themselves and detach from body, weight, and appearance messaging around them. Particularly revealing was the consistency in how the athletes' described the effects of the program (and thus the themes that emerged), suggesting that the benefits of BIM are perceived to remain consistent over time.

Although initial research, both quantitative and qualitative, has provided support for the effectiveness of ED prevention programming for female athletes (Abood & Black, 2000; Becker et al., 2012; Buccholz et al., 2008; Elliot et al., 2004; 2006; 2008; Smith & Petrie, 2008), two main limitations exist. First, although most studies have examined intervention effects over time, the time periods have generally been short, ranging from 6 weeks to 12 months. Thus, the longer-term effects of such programming is unknown. Although longer-term intervention effects may fade over time due to the ubiquity of sociocultural appearance pressures, research with nonathletes has demonstrated positive efficacy through 3-year follow-up (Stice et al., 2019). Second, and overlapping with the first limitation, is the reality that every athlete will, at some point, retire from their sport. For many, the transition out of sport is stressful and, for female athletes, often fraught with challenges around self-worth, identity, body image, and developing new relationships with food and exercise (Barrett & Petrie, 2020; Buckley et al., 2019; Fuller,

2014; Jewett et al., 2019; Papathomas et al., 2018; Plateau et al., 2017a; 2017b; Stephan et al., 2007; Thompson et al., 2020). Thus, examining the longer-term effects of such ED prevention programs, particularly for female athletes who completed the programming while active competitors but who have now retired, would be a logical and interesting next step in this line of inquiry.

Thus, the purpose of my study was to conduct a long-term qualitative follow-up evaluation of the Bodies in Motion program, focusing on female athletes who had completed the program while active collegiate athletes, who were now retired from their sport (<1 to 4 years), and who were two to six years removed from when they completed BIM. Using a semi-structured interview format, I examined athletes' perceptions regarding the efficacy of the program, including the specific skills and ways of relating to themselves that continue to be useful for them in the construction of their body image, their overall psychological well-being, and their relationship to food and being physically active.

Method

Participants

Participants were 12 NCAA Division I (n = 9) and III (n = 3) female collegiate athletes who had competed for six different institutions and who had been retired from their sports for 2.17 years (SD = 1.03); M_{age} = 24.42 years (SD = 1.44). All athletes had previously completed the Bodies in Motion (BIM) program at their university, on average 3.83 years ago (SD = 1.03). Eleven (91.7%) identified as White and 1 (8.3%) as Asian Indian. All 12 (100%) identified as women; 10 (83.3%) identified as straight/heterosexual and one (8.3%) as bisexual; one did not disclose. Five (41.7%) indicated they were single, five (41.7%) in a romantic relationship, one (8.3%) in a domestic partnership, and one (8.3%) married; none had children. Four (33.3%)

reported living with their spouse/partner, two (16.7%) with family, four (33.3%) with a non-relative (e.g., roommate), and two (16.7%) alone. Seven (58.3%) said they were employed full-time, three (25%) part-time, and two (16.7%) were not currently employed and not looking for work; four (33.3%) indicated they were currently pursuing a graduate or professional degree. They had competed in the following: tennis (n = 1); rowing (n = 4); swimming/diving (n = 3); skiing (n = 1); cross country (n = 1); and volleyball (n = 2). Current BMI = 24.82 (SD = 4.36).

Measures

Demographics

Athletes provided the following demographic information via an online form (i.e., Qualtrics survey): age, race/ethnicity, sport, year of retirement, relationship status, height, weight, living arrangement, sexual orientation, occupational/professional status (i.e., what are they doing now), and year of participation in the BIM program (from which "years since participation" was calculated) (See Appendix A for the complete Demographic Survey).

Interviews

Interviews were semi-structured and lasted 60-90 minutes (Berg, 2007). I used open-ended questions to prompt participants to reflect on, and share, their thoughts, feelings, attitudes, beliefs, and behaviors regarding their lives since completing the Bodies in Motion program. I asked participants about the impact of BIM on their bodily awareness (e.g., *Since completing the program, in what ways, if any, has BIM affected the way you have viewed your body?*), their relationship to food and exercise (e.g., *Since completing the program, in what ways, if any, has BIM affected your relationship with food or eating? Since completing the program, in what ways has BIM affected how you think about or engage in physical activity?*), and their overall psychological well-being (e.g., *In what ways, if any, have you continued to use BIM as you have*

moved forward in life?). I also asked about specific skills/lessons that were most and least helpful (e.g., *From your participation in the BIM program, what specific skills/lessons, if any, have you found to be most/least helpful?* See Appendix B for the complete Interview Guide).

Procedures

Following approval from the University of North Texas Institutional Review Board for Human Subjects Research, I contacted potential participants via a social media platform. When athletes completed the BIM program at their institutions, they were invited to join a closed, private social media group (i.e., Facebook) to continue their interactions and connections with program participants from across the U.S.

Through the Facebook page, I posted a request to participate in the study; my request included eligibility requirements (i.e., completion of BIM and retirement from collegiate sport), study requirements (e.g., semi-structured interview), my contact information, time commitment, and study purpose (i.e., explore perspectives of retired athletes who had completed the BIM program around body image, eating behaviors, and general psychological well-being). Eligible athletes who responded were sent the online demographic questionnaire and provided with a unique identification number so their demographic information could be matched to their interview responses. Athletes also provided informed consent in conjunction with the online demographics (see Appendix A for the Informed Consent). I subsequently scheduled interviews individually with each participant.

The first author conducted interviews via Zoom Video Communications and digitally recorded. I obtained verbal consent for recording prior to the start of each interview. To facilitate discussion and establish rapport, each interview began with the same introduction and invitation for the athletes to ask questions. I started by asking general background questions

(e.g., *Where did you go to school? In what sport did you compete at the collegiate level*?), and then moved on to the questions in the interview guide.

Throughout each interview, I asked follow-up questions to clarify, expand on, and probe further into their responses and experiences (e.g., *What specific program content or experiences influenced body image and related behaviors?*). To conclude, I asked if there were additional impacts of the BIM program that were not addressed during the interview, provided the Debrief Statement (see Appendix C), and thanked them for their time. Each athlete received a $50 e-gift card.

Data Analysis

I used reflexive thematic analysis to analyze and interpret the aggregate data. This approach is independent of theory and epistemology and can be applied across a variety of approaches to provide a detailed and complex account of the data (Braun & Clarke, 2006). Specifically, I employed a social constructivist lens (i.e., patterns were identified as socially produced) to examine the ways in which the retired athletes' realities, meanings, and experiences since completing BIM derived from, and were the result of, a range of social narratives (Braun & Clarke, 2006). From this constructivist framework, the thematic analysis occurred primarily at the latent (i.e., versus semantic) level, in which participant responses were bypassed and the broader meanings, assumptions, and conceptualizations identified and examined (Braun et al., 2016). When responses were brief or lacking sufficient context, I analyzed responses at the semantic level. Thematic analysis was conducted through a comprehensive inductive and deductive process following the six phases put forth by Braun et al. (2016), including familiarization, coding, theme development, theme refinement, naming, and writing. Given that Voelker et al. (2020) had conducted a qualitative analysis of BIM participants' experiences

immediately following, and 3-4 months, after completing the program, I used, a partial deductive thematic analysis that took into account their identified themes: (1) becoming aware; (2) changing my attitude towards myself and my body; and (3) developing new skills and ways of relating to myself.

I transcribed verbatim each interview by hand in Microsoft Word, generating a separate interview transcript for each participant. . I familiarized myself with participant responses question by question, and informally analyzed them to increase familiarity with each athlete's statements and take note of initial impressions and interpretive ideas. Following familiarization, I engaged in systematic and thorough coding of the data to capture identified meanings that related to the research questions and to build a foundation for subsequent stages of the thematic analysis. Specifically, I read the data closely (i.e., line by line), and tagged relevant pieces with a code (i.e., a word or short phrase that captures the salient attributes captured in the data; Saldaña, 2015). Tagged phrases were subsequently transferred into a Microsoft Excel spreadsheet and organized by question to increase opportunities for reflection on response content and process. Following an open, yet systematic, coding process, multiple codes were generated before confirming a coherent, cohesive coding scheme. Consistent with recommended best practice in thematic analysis (Braun et al., 2016), I reviewed the complete data set twice during the coding phase to ensure the identified codes were coherent and robust.

During theme development, I sorted initial codes into broader potential themes and sub-themes according to patterns of similarity within the codes and the identification of important understandings related to the research questions. I evaluated identified codes for their alignment with the previously identified themes (Voelker et al., 2020); I grouped together codes that reflected the existing themes (i.e., a deductive process). I created new, additional themes when

the codes were new, distinct, and salient, thus reflecting an inductive process. Codes that emerged in at least half of the interview transcripts were retained for consideration as a theme. I followed this approach for each interview question; when theme and subtheme similarities emerged across interview questions, the themes, subthemes, and relevant codes were converged, and the organization was reconfigured to reflect relevant and important understanding of how the data answered the research questions.

During theme refinement, a co-coder reviewed the identified codes and independently created her own thematic structure, which was then compared to mine; coding discrepancies were reconciled through discussion until intercoder consensus was reached (Campbell et al., 2013). Once the first author and co-coder had reached agreement, two "critical friends" reviewed the thematic structure; they provided additional suggestions, feedback, and, ultimately, confirmation of the identified themes and subthemes (Smith & McGannon, 2018). The first author and critical friends reviewed the themes, redefining as necessary until they reached consistency of codes, themes, and subthemes; at that point, the identified theme structure was retained. This review process was done with openness by completing two checks: (a) determining that the analysis fit well and the data were not misrepresented (i.e., via poor coding), and (b) determining that the themes and the narrative they generated sufficiently addressed the research questions. I used memoing throughout the familiarization, coding, and theme development stages to extract meaning from the data and facilitate reflection and open communication between me and the critical friends as we discussed and critiqued interpretations to reach a consensus (Birks et al., 2008). Once the themes had been reviewed and determined to both sufficiently capture the data and answer the research questions, we named them and organized them into a comprehensive analytic narrative (i.e., descriptive and interpretative

commentary presented to the reader; Braun et al., 2016).

Trustworthiness

Trustworthiness replaces the ideas of reliability and validity in quantitative analyses, to ensure the soundness of the data, and is comprised of credibility, transferability, dependability, and confirmability (Shenton, 2004); I attended to each in this study. First, I used established methods of thematic analysis (e.g., Braun et al, 2016), and participants voluntarily self-selected. The researcher, co-coder, and critical friends were familiar with collegiate sport culture due to their own personal athletic backgrounds and professional experiences as sport psychology consultants. Second, participant anonymity encouraged honest responding, and discussions and debriefings among the analytic team throughout the thematic analysis process challenged assumptions we may have held. Third, the use of iterative questioning (i.e., probes during interviews), debriefing sessions among the analytic team members, use of prior research to frame findings, and use of reflective commentary and a reflexivity statement (detailed below) helped ensure credibility. Provision of background data to establish study context as well as the inclusion of a sample representing multiple sports, levels (i.e., divisions) of collegiate competition, and universities helped ensure transferability. I addressed dependability via detailed description of procedures and data analysis to inform replication. Finally, I addressed confirmability through recognition of the study's limitations and by exploring biases and assumptions with the co-coder and critical friends through reflective commentary.

Reflexivity Statement

In qualitative analyses, the subjectivity of the researchers can influence the study being conducted, and the identity variables (e.g., race, gender) and experiences of the data analysts can impact the way research is conducted and how data are interpreted (Sparkes & Smith, 2013). All

members of the analytic team self-identify as cisgender; three as women and one as a man. Three identify as White; one woman identifies as Black. The researchers range in age from mid-20s to late-50s, and all have been lifelong participants in sports, from recreational to NCAA Division I levels in individual (e.g., figure skating) and team (e.g., basketball, softball, volleyball) sports. All four have training and educational backgrounds in sport psychology and counseling psychology; one is a licensed psychologist and two are doctoral-level trainees in psychology; two are Certified Mental Performance Consultants (AASP). Three have previous research experience in eating and body image concerns among female athletes. The two critical friends co-developed the Bodies in Motion program, and thus have extensive knowledge of its aims and content. These identities and experiences helped the researchers understand and interpret the participants' experiences. For example, as former athletes, they could relate to, or identify with, participants' relationships to food, exercise, or body image, as both competitive and retired athletes. However, due to the ubiquity of societal pressures, it is possible for the researchers to experience ongoing struggles with body image and appearance, which may negatively shape their interpretation of the data. The diversity across race, gender, and age among the analytic team members allowed the data to be interpreted through multiple intersectional lenses with the intention of minimizing biases. Finally, although the existing academic, professional, and specific program knowledge may have aided recognition of terms and latent meanings, the true intent of participant responses may have been superseded by that knowledge during theme development and refinement.

Results

The results of the thematic analysis yielded 354 codes, which were subsequently organized into 18 subthemes and four higher order domains (see Table 1). The four higher order

themes were: 1) Increased Awareness (five subthemes); 2) Shifting Perspectives (five subthemes); 3) Application of New Skills and Ways of Relating to Myself and Others (four subthemes); and 4) Reflections over Time (four subthemes). Each domain and its respective subthemes is described in further detail below.

Increased Awareness

The participants reported increased awareness across five identified subthemes: 1) I realize beauty is socially constructed and communicated; 2) I see how societal pressures are internalized and impact how women think and feel; 3) I am not alone and there is a community of women who support me; 4) I and my body are unique; 5) the sport environment affected my view of my body and myself.

The first subtheme involved the participants' awareness of societal messages related to beauty and appearance, as well as the realization that these messages, pressures, and expectations are communicated through various forms of media (e.g., social media, magazines). This awareness reflected the program's cognitive dissonance-based content. For example, participants reported that societal messages reflected "warped ideas" and "unrealistic" standards and expectations that were "ubiquitous," and, generally, promoted images of "really skinny, thin women" as the societal ideal. As one swimmer noted, "A lot of the time, in the media…we see really skinny, thin women and we see that as…what society wants to tell us is beauty." Further, participants understood that these thin-ideals were incongruous to their athletic bodies and irreconcilable to the demands of their sport, which aligned with "the female athlete paradox" (Krane et al., 2004). A diver's comment illustrated this point, "Now, when I'm on any sort of social media or [see] anything on the TV…I'm not as naïve as to the fact that that's not realistic…and I shouldn't try to get that image."

The participants also described an increasing awareness of how societal pressures, expectations, and standards can permeate the ways in which women think and feel about themselves and their bodies, and just how ubiquitous these pressures were. The participants reported being aware that external beauty ideals can become the standard to which women compare their own bodies, which reflects the concept of *thin-ideal internalization* (Striegel-Moore et al., 1986). Two athletes' comments clearly illustrated this subtheme: "It's crucial to realize that…it [societal standards of beauty and appearance] can really mess up a person's self-respect, self-image, and it can do so much damage (tennis player)" and "I had a greater awareness of…how you're just…breathing in…those expectations and standards." (diver)

The participants reported becoming aware that they were not alone in their feelings or experiences and, through the BIM program, learned that there is a community of female athletes (from across all sports) from whom they can seek support. One participant shared:

> Every sport has their own set of worries and anxieties that come with their body and how they perform, so…after talking to other girls and realizing we all have similar issues going on, I was like, 'Okay…we are all dealing with it.' (rower)

The sense of community and connection that came out of their shared experience within the BIM program provided them with a sense of "peace," "validation," and "solidarity" with other athletes on their campuses. This awareness of community was long-lasting as a volleyball player discussed how she kept her mindfulness stone in her wallet for several years post-program, and "every time I saw it, I just remembered the Bodies in Motion thing and…that community. I just remember feeling so good...being in that group."

The fourth subtheme reflected the participants' increased awareness that their bodies and their personhood were unique, thus challenging society's often singular standards of beauty. Participants recalled the program's emphasis on the uniqueness of their bodies (i.e., "No body is

the same, and every body is different." [rower]) and their uniqueness in general (i.e., "I think when I look back to the program it focused so much on…'you're unique.'" [tennis player]). Extending this awareness, some participants reflected on the uniqueness of their bodies as it applied to their sport ("isn't an ideal body type for any sport" [diver]), athlete identities ("Even in…a room full of people who are all at their peak physical fitness, we all still look very different." [swimmer]), and performances ("Everybody's body size, body shape is different and doesn't necessarily equate to success…in their sport." [tennis player]).

The fifth subtheme reflected how their experience in the BIM program helped them realize the negative impact that the sport environment could have on their self-esteem, confidence, and body image, and how such impacts could relate directly to eating concerns. One tennis player shared, "I realized how negative and toxic it [the environment with my coach] was. You see…how easy it is for female athletes to…pick up terrible habits and pick up…eating disorders and stuff." Participants identified numerous elements of the sport environment that negatively affected them, including messages communicated by coaches and teammates, uniforms that increased feelings of self-consciousness, and procedures that focused them on their bodies (e.g., body fat measurements). For example, a swimmer described how her racing swimsuit constantly prompted negative thoughts and feelings toward herself and her body:

> The big thing in swimming was that you would be put into…those tiny suits, and getting in a suit doesn't feel good when you have to…roll up your body and …roll up your skin. It's just a reminder—when you have to pull it up and it's tight on you—of how much you weigh. And every single time you put it on, it's like, 'Oh yeah, I am not…super skinny enough that this would just slip on.'

Table 1

Common Themes with Sample Quotes

Theme	Subtheme	Sample Quote (sport)
1) Increased Awareness	1) I Realize Beauty is Socially Constructed & Communicated	"I just recognize...how many ideas they are sending at you…all the time and from how many different directions. And really being able to…in the program, sit down and recognize… 'wait, these are…these are competing ideals.'" (diver)
	2) I See How Societal Pressures Are Internalized & Impact How Women Think and Feel	"It's [society's ideas about beauty and appearance] definitely distorted. And I think it's…crucial to realize that…it can really mess up a person's self-respect, self-image, and it can do so much damage." (tennis player)
	3) I Am Not Alone and There is A Community of Women Who Support Me	"Hearing that other people have had bad thoughts about their bodies. Even people who you would look at and say, 'Oh my gosh, like, you have the perfect body, like, I wish I had your body.' It made you feel like you're part of a community." (swimmer)
	4) I And My Body Are Unique	"As an athlete there are so many components to you and you have your own strengths, you have your weaknesses and the program really did harness on that…we're all so unique and everyone has their own body." (tennis player)
	5) The Sport Environment Affected My View of My Body and Myself	"Everything my coach said was…in one ear, out the other. He was so negative, and he had such a negative view on everything my body did...He really messed up my view on my body and…he made me think of my body as less than or weak." (volleyball player)
2) Shifting Perspectives	1) Appreciating My Body and What It Can Do (Body Functionality)	"I now see…all bodies as beautiful. And before it was almost like no, only this body type is beautiful, only this woman." (volleyball player)
	2) Moving from Self-Criticism to Self-Compassion	"There's a lot of comparison with magazine, or something you see online on social media, and I was able to switch that mindset to, 'My body looks like this because I'm an athlete and I'm strong and I'm needing this.'" (rower)
	3) Mindfully Detaching From Negative Thoughts and Messages About Myself and My Body	"Not to necessarily listen to...every...criticism that I gave myself, especially with the more negative things, [or] ones that are...out of your control." (rower)
	4) Reframing Negative Thoughts and Messages about Myself and My Body	"I…definitely took a step back and thought about it, like, 'OK...I'm at my championship meet, I want to swim my best. I'm putting this suit on and my skin, it has a roll in it because it's so tight. I could be upset about it right now. Or I can think about all the amazing things that my body has helped me do.'" (swimmer)
	5) Having More Confidence In and Comfort With My Body Size and Shape	"I think I…became more confident in my body and, therefore, kind of more confident as a woman and just embracing the curves." (rower)

(table continues)

Theme	Subtheme	Sample Quote (sport)
3) Application of New Skills and Ways of Relating to Myself	1) I Advocate For a Healthier Body Culture	"I felt like I had the skills to be…an advocate. Definitely the program has made me…more willing to interrupt things when I see it." (diver)
	2) I Am More Present and Mindful	"Mindfulness has been most helpful just because I was able to take myself out of the negative thoughts or the negative mindset that I was in and kind of bring myself back to the present." (volleyball player)
	3) I Have a Healthier Relationship With Food and Physical Activity	"I was a lot more…tight and structured about things and now I think I'm just so much more focused on…is…what I'm eating making me feel good? Is it…fueling my body the way it needs to be? Is it colorful? Is there variety?" (diver)
	4) I Practice Compassion For Myself and My Body	"That was really helpful to just…be like, 'OK, if I'm struggling right now, I'm struggling, and…there is light at the end of the tunnel, but it just takes some time.'" (rower)
4) Reflections Over Time	1) Bodies In Motion Lessons Helped Me With My Transition Out Of Sport	"I realized, like, 'Oh my identity is not in my sport' and…that changes…the way I look at myself in my sport, and ultimately, how I've been able to cope with retirement." (diver)
	2) I Have Applied BIM Lessons to Other Aspects of My Life	"Sometimes when I'm taking 5 minutes to breathe, I realized something had happened to me that day that I might have not been that aware of how stressful it was. And then it comes out in those five minutes." (rower)
	3) I Have Learned That Change Takes Time	"I don't know that I was really ready to…start thinking differently about it when I did the program…it took awhile." (cross country/track athlete)
	4) Overall Positive Impact on Me and My Life	"I would say that it [BIM] was so positive that it actually has impacted and…I've still got so many things from it to this day." (tennis player)

Shifting Perspectives

Participants reported that the program had helped them to not only become more aware, but also to shift their beliefs and attitudes about themselves and their bodies. These shifting perspectives were reflected in five subthemes: 1) appreciating my body and what it can do (body functionality); 2) moving from self-criticism to self-compassion; 3) mindfully detaching from negative thoughts and messages about myself and my body; 4) reframing negative thoughts and messages about myself and my body; and 5) having more confidence and comfort with my body size and shape.

The first subtheme reflected the development of a more expansive appreciation of their bodies and what their bodies can do (i.e., the functionality of their bodies), and an acceptance of their athletic bodies as they are ("I'm built with…more of a barrel chest and…thicker thighs, and that's okay" [rower]). This acceptance extended to parts of their bodies that may have previously been labeled as "flaws" as well. One rower shared, "I'm allowing flaws to just be there. I don't need to be this certain standard…as long as I'm healthy and feel good with it, that's good, and just be proud of what I've accomplished and…the way I look," whereas another rower described an enduring process of accepting her body as it "continues to change." Their shifting attitudes toward their bodies intersected with a growing appreciation of themselves as women, understanding that "being a woman who is muscular and being a woman who is an athlete is so beautiful (volleyball)." Further, participants reported shifts toward valuing their body's functionality, expressing thanks for being "able-bodied" and able to participate in a variety of activities, as well as for the "versatility" their bodies afforded. For some, this body appreciation emerged as a general expression of love: "I think the biggest way is…loving myself and loving my body and just being really appreciative of what it can do (diver)."

Moving from criticism to compassion was illustrated by a diver who stated, "When we were in the program, we talked a lot about…just being…gentle and kinder and having more of a positive mindset towards your body;" for this athlete, the shift was an enduring benefit that she noticed particularly as she retired from sport. Another athlete noted how the BIM program had helped her shift from negative thoughts and feelings in relation to expected body changes and transitions ("eliminated the fear of how my body will change. I was like, 'my body is what it is and it...transitions with me'" [rower]). Lastly, this shift was seen in how participants engaged with or responded to societal messages and pressures related to body and appearance as expressed by a rower: "it's okay if you're not meeting up to society's…ideal female body" (rower).

The third subtheme represented more detachment from negative thoughts and messages about body and self. For example, participants described "moving away" and "taking a step back" from media messages or comments heard or received. As one diver shared, "At some level you have to say, 'okay, I'm…not going to meet all these ideal because it's impossible and that's okay.' Then they [societal messages about beauty and appearance] carry a lot less weight." As illustrated by a rower, for some participants, this mindful detachment was tied to an awareness of the negative impact of self-criticism on their overall well-being:

> Not to necessarily listen to…every…criticism that I gave myself, especially with the more negative things, [or] ones that are…out of your control…you really shouldn't dwell on them because all that's going to do, in the long run, is just negatively impact your mental health.

The fourth subtheme reflected a shift toward reframing negative thoughts and included a two-step process of catching themselves being self-critical and then shifting their thoughts positively. A rower explained, "The program has really helped me reframe my thinking and just kind of restructure it and…it showed me different aspects of…how I should see my body

and…put it more on the positive side." For some participants, this perspective shift included recognizing their own sense of agency or choice in their thought processes:

> After I went through the program, I…definitely took a step back and thought about it, like, 'Okay…I'm at my championship meet, I want to swim my best. I'm putting this suit on my skin, and it has a roll in it because it's so tight. I could be upset about it right now, or I could think about all the amazing things that my body has helped me do because I had a roll of fat. (swimmer)

Additionally, participants described reality testing as a component of this reframing process, as indicated by one rower who shared her process of responding to her negative thoughts by saying, "Okay, you can think this way, but that's not necessarily what it's actually like."

Through the fifth subtheme, the participants' emerging confidence and comfort was reflected in how they talked about their bodies in general ("I definitely have had a greater level of confidence after completing the program" [diver]), and in relation to particular identities. Some participants described themselves as being more confident in their athletic identities (e.g., "knowing that…I've worked hard to have this body and that it performs the way that it should" [diver]), whereas others did so in relation to their identities as women and/or their beauty/attractiveness ("I think the program showed me that I am pretty the way I am and that I am a pretty woman the way I am." [rower]).

Application of New Skills and Ways of Relating to Myself and Others

Consistent with the program's experiential focus, and extending on findings from the initial examination of the BIM program (Voelker et al., 2020), participants reported that they had learned new skills across four subthemes: 1) I advocate for a healthier body culture; 2) I am more present and mindful; 3) I have a healthier relationship with food and physical activity; and 4) I practice compassion for myself and my body.

The first subtheme represented the participants' advocacy and action when they

encountered negative, unrealistic, or critical body and beauty messages in their environment. Participants described "challenging," "interrupting," and "not perpetuating" negative body messages when they heard them, even with individuals in positions of power (e.g., coaches). For example, a diver challenged their coach for praising the appearance of an athlete in a magazine by saying, "It's probably not real…we're not going to make that the standard for the team today." For many athletes, advocacy took the form of sharing their insights and experiences from the BIM program with teammates, friends, and loved ones (e.g., parents, siblings). As one volleyball player explained:

> It's so important for me to…build other people up. For me...moving forward…it's so important that athletes understand how...truly incredible their bodies are, no matter what size, shape...athleticism...it doesn't matter. It's so important to understand that...your body is doing incredible things for you and to appreciate it and love it…I think that's something that I want to continue to preach.

Their advocacy was not just for the present, but something they wanted to do into the future. A rower captured this sentiment, "If I have daughters, I think I'll definitely take what I've learned and apply it to…her...I know she'll go through the same stuff that I went through, and I'll just help her be like, 'it's okay.'"

The second subtheme reflected participants' enduring ability to be present and mindful with themselves and in their lives. A cross country and track athlete explained:

> Mindfulness…helped me…remind myself to…look around sometimes…and appreciate the moment that I was in, which actually happens…sometimes when I'm exercising and it's hard…I'm like, 'this is something that I'm lucky to do' and just trying to be more present.

Participants described using tools from the program (e.g., centering stone) as well as incorporating mindfulness apps (e.g., Headspace) to facilitate their ongoing practice. Additionally, participants described their mindful engagement with their thoughts and feelings, such as approaching them with curiosity and non-judgment. As one rower described asking

herself, in response to self-critical thoughts, “Is this something I’m thinking of myself because that’s what people told me I should think of myself, or is it how I’m actually feeling?”

The third subtheme reflected their healthier relationship with food and physical activity, that is, viewing “food is fuel.” With respect to food, participants reported developing and maintaining a “stronger mentality around fueling” and an awareness that eating and being happy are not mutually exclusive. As one tennis player explained:

> It added that positive spin that ‘yes, you can treat yourself too.’ It took away a lot of guilt and it helped me put things in perspective that it’s okay to…eat pizza…once in a while and not feel terrible and then punish yourself.”

Additionally, some participants described a reduced preoccupation with food and eating (“I’m no longer thinking about this [food] every day…it is no longer consuming every second of my day” [track and field]). Regarding physical activity, participants now engaged in it as an “outlet” that led them to feeling “happier.” As one diver explained, “Now, honestly, physical activity really is just about…fun. Something that I’ve loved about being retired is creating my own workouts and my own physical activity and having it really be, ‘does this…bring me joy today?’” Participants described detaching from rigorous, high-intensity workouts and having the “freedom” to not to work out for various reasons (e.g., feeling sore, low energy, not wanting to exercise). This idea is illustrated by a swimmer: “I used to think I had to work out, especially right after I stopped swimming…now I think about physical activity and what I can do to…make me feel better.”

Extending from their perspective shift, the participants described practicing skills related to being kind and compassionate with themselves, such as the mantra to which they were introduced in the program (see Neff, 2003a; 2003b). The athletes endorsed the ideas of “not beating [themselves] up” and “not feeling ashamed” about their bodies or thoughts, feelings, and

behaviors around food and exercise. As one rower elaborated on her use of these skills, “That was really helpful to just...be like, ‘okay, if I'm struggling right now, I'm struggling, and there is light at the end of the tunnel, but it just takes some time.’”

Reflections over Time

In the time passed since the athletes participated in the BIM program, which ranged from two to six years, they had a more nuanced and evolved understanding of, and relationship to, what they learned initially (see Voelker et al., 2020). Participants described how many of the benefits of the program had unfolded over time and were represented within four subthemes: 1) Bodies in Motion lessons helped me with my transition out of sport; 2) I have applied Bodies in Motion lessons to other aspects of my life; 3) I have learned that change takes time; and 4) overall positive impact on me and my life.

The first subtheme concerned the participants’ awareness that their experience in the program helped them navigate their transition out of sport (i.e., retirement), even when that occurred years after their participation. One swimmer explained:

> It [retirement] definitely…put things more into perspective about…the way you see yourself when you're retired. That message [to starve myself] never really...resonated with me, but when I retired…I think I understand...why people do this [restrict], but then also...understanding why that isn't a good thing to do. So, I guess it helped me, once I retired, complete the lesson.

Participants noted that having the “awareness” instilled by the program of “toxic” media messages was helpful to them as they retired (“I really felt that social pressure of ‘you have to look a certain way’ once I left the sports community...and then I had to take a step back and be like, ‘no, that's not something that I want to influence my life that much.’” [rower]). Participants also reported applying skills taught in the BIM program, such as mindfulness, developing appreciation and gratitude for their bodies, and viewing food as fuel, to help them cope with

retirement. Finally, their transition out of sport reinforced a general sense of gratitude for having chosen to participate in the program, as a tennis player explained, “Thank God…someone told me [to do BIM] back then, because now when…I am struggling to find my place…I at least have some knowledge that ‘this feels toxic’ or ‘this feels more positive.’”

As captured in the second subtheme, BIM lessons extended beyond sport retirement to other major life transitions or events, general coping with stress or adversity, and interpersonal relationships. Participants spoke to the utility of mindful self-compassion exercises (e.g., gratitude) in relation to injuries, surgeries, and the diagnosis of a chronic illness. A rower identified how mindful breathing helped her cope with stress and care for her emotional well-being, noting:

> Sometimes when I'm taking 5 minutes to breathe, I realized something had happened to me that day that I might have not been that aware of how stressful it was. And then it comes out in those five minutes. So it [BIM learning] helps me just...reflect and take the time of the day to see how I'm doing emotionally.

Some participants connected their BIM experience to their interpersonal relationships. One rower explained, “In…romantic relationships, that [BIM] learning kind of showed…I had a different view of myself, and the confidence kind of showed in that area the most.”

The third subtheme reflected the reality that some growth and change did not occur immediately, but developed over time. Participants discussed how the program “paid off in the long run” and identified “gains beyond the time in the program.” More specifically, participants described initial negative reactions to specific program content (e.g., the mirror exercise) that evolved into something positive for them. A cross country and track athlete explained:

> I knew that I was still trying to attain them [societal standards of beauty] myself, and I was not ready to...accept that that's not how I needed to be. I knew it was how other women were expected and shouldn't have to be, but I was still like, ‘Well, I can still try to be really skinny, but other people...shouldn't because that's not realistic, but...I'm still

> going to try' and I think, as of very recently, I've been more open to kind of seeing...to accepting it for myself.

The learning and impact of the BIM program was ongoing and ever-evolving, as indicated by a rower who said, "There's always something you can work on and I don't think I'll ever get to a point where I just wake up every day and I'm like, 'today I'm perfect.'"

The fourth subtheme represented the overall positive impact of the BIM program in participants' lives. They described the program as "helpful," "impactful," and "positive," and many participants expressed a strong desire that other athletes have the same opportunity. Participants also expressed feeling "grateful" and "thankful" for the program, their participation in it, and the lessons they learned. They described the program as a "framework" that they were carrying forward in their lives and a "touchstone" that grounded them. Participants noted that these positive effects actually extended to others in their lives. As one diver explained, "I found myself just…really grateful for having been through the program. I'm…so grateful because I can see how that has…had an impact on my life and…through me I know has had an impact on people around me."

Neutral and Negative Responses

Although insufficient in quantity to warrant a theme, some participants noted neutral or negative long-term effects. Although none identified any aspect of the program as "unhelpful," some highlighted things that were missing and might have been helpful to cover. For example, a skier stated that by not directly discussing eating or physical activity, BIM had not affected her subsequent relationships to food or exercise. One participant stated that she had not directly applied program content in her life but suspected that she had been impacted by the experience, sharing, "I'm sure that the knowledge has…seeped in…but I can't say that I…intentionally put any of the skills or lessons that I learned into…my life." One participant reported positive

impacts of some exercises and strongly disliking others, stating, “Some of the exercises…felt dumb to me because I…wrote them off because I didn’t really want to deal with them, and then others had a huge impact.”

For an athlete who described spending four years in a collegiate sport environment that was permeated by negative food and body messages, the five-week duration of the program was, perhaps unsurprisingly, insufficient for her. Although she described the program as “empowering” and identified helpful components, such as self-compassion and connecting with other athletes, she was uncertain how much her thought process could have changed given the environment she was in. This perspective may have been shared by other participants who provided feedback that the program and its sessions be “expanded,” “longer,” and “more spread out.” Lastly, two participants reported neutral feelings about the social media component of the program, primarily because it “felt like a requirement” and there needed to be “more discussion” and “more involvement” among the participants to have made it more worthwhile.

Discussion

Using a qualitative methodology, I examined female athletes’ enduring perspectives of themselves and their bodies, as well as their evolving relationships with food and physical activity, all in relation to their prior participation in the Bodies in Motion program. Consistent with the program’s aims, and thematic findings from its initial qualitative evaluation (Voelker et al., 2020), these retired female athletes have continued to (a) increase awareness about themselves, their peers, and how society affects them, (b) shift perspectives in how they view, and treat, themselves, and in their confidence in (and appreciation of) their bodies, and (c) apply new skills and behaviors that are consistent with their evolving awareness and understanding. Further, given the two to six years that had elapsed since their participation, they reflected on

how their growth and development had unfolded over time and on how their involvement in BIM had been positive and had helped them navigate otherwise challenging transitions (e.g., retirement from sport). Despite the range in years since participation in the BIM program, no notable differences emerged in the thematic structure related to time away from the program.

As reflected in the first theme, participants' awareness of how beauty is socially constructed and communicated, and of the negative effects of such messages, had increased since they participated in BIM. Participants referenced specific program exercises (e.g., mirror exercise, review of media images of women's bodies) as particularly salient to their evolving awareness about the unrealistic and, at times, conflicting societal ideals about beauty. Further, self-monitoring activities (e.g., paying attention to the negative comments women make about their bodies) opened their eyes to how women internalize, and are influenced by, such appearance ideals. Extending on Voelker et al. (2020), these retired athletes had become aware of just how much their sport environments (i.e., as defined through pressures and messages from coaches/teammates; and from having to wear tight, form-fitting, or revealing uniforms) had affected their body image and athletic identity. As cognitive-dissonance represented one of the program's two theoretical frameworks, a primary aim of BIM, and similar prevention programming (e.g., Bar et al., 2016; Stice et al., 2019; Stice et al., 2007), is to make women acutely aware of the ubiquity of general societal, and sport-specific, pressures, and how, when internalized, these may result in such negative views of self and body. My results demonstrate that the awareness that emerges immediately following participation in BIM (Voelker et al., 2020) not only remains with the athletes, but evolves, expands and becomes more nuanced over time.

The women also described how they had become increasingly aware that they are not

alone in their experiences and that there is a community of women from whom they can seek support. Based on both the richness and thickness of this subtheme (Dibley, 2011), it is clear that this awareness was one of the most enduring impacts of the Bodies in Motion program. Resulting from the program's group-based structure where they shared their thoughts and feelings about their bodies and themselves, as well as from their experiences with the in- and out-of-session assignments (e.g., body activism), the women described how they developed strong connections that extended beyond each 75-minute session (i.e., seeing other group members around campus) and beyond their time in the five-week program (i.e., recalling their groups as a reminder that they were not alone). This subtheme relates to BIM's mindful self-compassion framework and illustrates the concept of *common humanity* (Neff, 2003a; 2003b). As Neff has argued, struggle is part of the human condition, yet individuals often believe that no one else could understand their suffering and struggles and thus feel and believe they are alone (Yalom & Leszcz, 2005). However, shared experiences, mutual support, and empathy, all of which were present within BIM, appears to have fostered an awareness within these women that, indeed, they are connected and not alone, and that such connections have lasted years into the future.

Emerging from their awareness, and consistent with attitudinal changes that were noted in the immediate aftermath of their BIM participation (Voelker et al., 2020), the athletes described shifts in how they thought about, and related to, themselves and their bodies. For example, they described shifting from self-criticism to self-kindness and, in general, to being more detached from negative messages, thoughts, pressures, and the expectations of their bodies. These shifts reflect the concepts of *mindfulness* and *self-compassion* (Neff, 2003a; 2003b), which are central components of the BIM program. Further, the athletes reported ever-evolving feelings of confidence and comfort in their bodies, which are the antithesis of body dissatisfaction (Polivy

& Herman, 2002). My results suggest that the positive shifts that female athletes made in the months following their participation (Voelker et al., 2020) remain years into the future. As a result of being in the Bodies in Motion program, the women continued to disrupt the internalization of negative appearance schemas and shifted to self-, and body-, perspectives that were based on kindness, compassion, and a connection to others. Although not assessed directly in my study, with such shifts, and increasing levels of body confidence and comfort, reductions in ED risk would be expected to follow (e.g., Braun et al., 2016; Moffitt et al., 2018; Rahimi-Ardabili et al., 2018).

Consistent with the program's aims, the women described an ongoing development and application of new skills and behaviors that appeared to represent a natural translation of their increased awareness and perspective shifts. For example, the women described using their breath to be in the present-moment (being mindful) and/or how they would accept their current struggles, knowing that those would pass (being self-compassionate). Some described using app-based technologies (e.g., mindfulness apps) to help them develop and apply these new skills. Similar to what has been found among other groups of retired female athletes (e.g., Papathomas et al., 2018) and extending on the immediate effects of the BIM program (Voelker et al., 2020), the women described how they were making healthier choices in relation to their eating and the ways they were exercising, and how they had started to advocate for a healthier body culture with others. This advocacy likely emerged from the athletes' experiences with the program's body activism and body celebration activities. Through these activities, the athletes had opportunities to actively "push back" against societally-based pressures and to openly share with others a positive and affirming view of their bodies. Although this advocacy had occurred in their current/immediate lives, such as within their sport teams and/or with their friends, the

athletes also described their commitment to extending it into the future. For example, they wanted to share positive messages about women's bodies and selves with their future children and to create healthy spaces in which younger athletes might thrive in the absence of negative messaging from coaches.

Given that 2 to 6 years had elapsed since completion of the BIM program, the athletes' perspectives on the program's utility and benefits had become more nuanced, and extensive, over time. For example, the women reflected on how what they had learned through the program had helped them cope more effectively with their transition out of sport and on how they had begun to apply BIM lessons/learning to other life areas, such as relationships, managing stress, and navigating health issues. This generalization of learning was built into the program's design and content, particularly through the inclusion of mindful self-compassion principles and tools that could be applied across all areas of life. The athletes also discussed how change and growth did not occur immediately following completion of the program, but rather emerged over time as they became more ready for such change. Consistent with the stages of change model (Prochaska & DiClemente, 1982), these results indicate that, for some, implementation of knowledge and skills may not occur immediately following program completion, particularly if they were in a more contemplative place in relation to themselves and their bodies. However, my findings suggest that even when athletes do not implement immediate change, the impact and benefits of the program can emerge over time. Lastly, participants unanimously endorsed how the program had positively impacted their lives and an appreciation for having participated while they were collegiate athletes.

The structure and content of the Bodies in Motion program and the results of the present study address Piran's (2015) call for prevention programs to promote the psychological

processes that enhance positive connections with the body. Positive body image, a protective factor in the onset of eating concerns, can be fostered through the development of a critical perspective toward social pressures, especially during vulnerable periods (e.g., transition out of sport). My results indicate that the program helped the athletes foster a critical perspective of societal pressures as related to self and body, and toward others in advocating for a more accepting body culture. Additionally, experiences of body agency and functionality have been identified as one of the five dimensions (processes) of positive embodiment and may be protective against the development of eating disorders. Piran (2015) suggested that effective ED prevention efforts must orient toward increasing the awareness of and belief in body agency and functionality. My results support this position, as participants overwhelmingly spoke to the impact of the Bodies in Motion program in helping them shift their perspectives on their bodies and foster a more expansive appreciation of both their athlete and woman bodies, and what their bodies can do (i.e., body functionality).

Similar to comments shared immediately following completion of the program, these women described neutral experiences and provided constructive program feedback as well. Although none of the athletes described anything as unhelpful, some noted the program may have been missing features/content that could have helped them, such as by directly addressing disordered eating or discussing body changes in retirement from sport (and how BIM lessons can be helpful). Additionally, some participants noted liking some content while disliking activities related to it. For example, although the group-based structure and discussion was unanimously favorable, some noted that in-session writing activities (i.e., describing thoughts in the program workbook) or posting on the social media page were less helpful. My results suggest that initially some participants may have less positive experiences with specific program content or activities,

particularly those that prompt them to look inward or discuss how they feel about themselves or their bodies; however, with the passage of time, most (if not all) are able to identify multiple content components and activities that have helped them and to acknowledge the very positive impact that the program (as a whole) had on their lives. Similar to the athletes' reactions immediately after program completion (Voelker et al., 2020), the social media component of the program was not one of the ways they sought support or found a sense of community. Given athletes' reactions across time to the social media component, it is clear that modifications to the platform are needed, such as the development of a program specific smartphone app, if it is to provide utility to participants. Lastly, some participants commented that program duration may have been insufficient to counteract the negativity and pressure they experienced in their collegiate sport experiences. Although a longer program may prove difficult given athletes' demanding schedules, providing content check-ins or "booster" sessions (Voelker et al., 2020, p. 13) at regular intervals to increase exposure to and benefits of the program content may be viable.

Limitations and Future Directions

My study had many strengths, including a long-term follow-up to an ED prevention program, the use of semi-structured interviews that allowed for elaboration and context so participants' intended meanings could be discerned, and the reflexive, thematic analysis of the data. Despite these strengths, there are limitations that warrant discussion. First, although participant recruitment targeted athletes who had completed the BIM program, those in my sample self-selected in. Thus, my sample may be biased by the inclusion of female athletes who had had a positive experience with BIM and wanted to share their stories. Even so, all participants were given the opportunity to share negative or constructive feedback, and some

identified areas that could be improved. Second, my qualitative methodology (and data) do not allow for determinations of temporality or causality. However, they do provide a rich description of the athletes' experiences with the program and how it helped them through two to six years of lived experiences, including their retirement from sport. Third, my sample was diverse in terms of years since program completion and sport played, but primarily consisted of the perspectives of white, heterosexual and woman. Although the demographics of the participants were similar to those from Voelker et al. (2019), interpretations of the findings need to be made within this contextual reality, understanding that these findings reflect the diversity of the participants.

Keeping these limitations in mind, my findings have practical applications for sports medicine professionals who may work with female athletes around issues of body and eating. First, although researchers have tested different ED prevention programs with female athletes (see Bar et al., 2016), my findings extend support for Bodies in Motion beyond the few months following participant completion. Although participants undoubtedly did not remember all program content over time and some advocated for a longer program duration, it is clear that the athletes continued to benefit from their experience in the 5-week program as many as six years into their futures. Second, the athletes made clear that the program and its content helped them successfully cope with key transitions in their lives, in particular their retirement from sport, which happens to over 98% of collegiate athletes when they graduate (NCAA, 2018). Third, consistent with Voelker et al. (2020), the athletes highlighted the program's heterogeneous, group-based format, experiencing it as a particularly impactful mechanism for change and growth. Thus, future program leaders might purposefully recruit athletes from a variety of different sports to participate, as opposed to drawing from a single sport or team. Finally, as with any psychological intervention, program leaders should be mindful that some participants' initial

experiences with the program content and activities may be neutral or even negative. As such, they can take heart that, for most, the program can serve as a catalyst for long-term positive growth and development.

ED prevention research with female athletes is needed to determine program efficacy, and this study extends earlier evaluations of the Bodies in Motion program (Voelker et al., 2019; Voelker et al., 2020). Through qualitative interviews, I explored how female athletes had internalized and adopted the BIM program's content and skills and applied them in their lives for years after having completed the program. Similar to their initial experiences (Voelker et al., 2020), the athletes reported increased awareness about society's effects on them, shifted perspectives in how they viewed themselves and their bodies, and ongoing use of skills they had learned to effectively manage their ongoing lives. Further, the athletes acknowledged how the program content had stayed with them and had helped them manage challenging life transitions (e.g., retirement from sport). Although some areas for improvement were noted, the athletes uniformly expressed having had a very positive experience in the Bodies in Motion program, wishing it was something that other female athletes could have as well.

APPENDIX A

INFORMED CONSENT AND DEMOGRAPHIC QUESTIONNAIRE

Informed Consent for Studies with Adults

TITLE OF RESEARCH STUDY: Psychological Well-Being and Retirement from Sport: A Mixed-Methods Investigation

RESEARCH TEAM: : Trent Petrie, PhD, trent.petrie@unt.edu, Psychology Department, Terrill Hall 368, 1155 Union Circle #311280, **Denton**, TX**; Karolina Wartalowicz, M.S., karolinawartalowicz@my.unt.edu; Stephanie Barrett, M.S., stephaniebarrett@my.unt.edu**

You are being asked to participate in a research study. Taking part in this study is voluntary. The investigators will explain the study to you and will any answer any questions you might have. It is your choice whether or not you take part in this study. If you agree to participate and then choose to withdraw from the study, that is your right, and your decision will not be held against you.

You are being asked to take part in a research study about college student athletes' experiences as they graduate and transition out of sport. Specifically, we are interested in better understanding what may contribute to them making a successful transition from sport and how their psychological well-being may vary over time. The information obtained through this study may serve as the foundation for developing intervention programs to help future student athletes with this transition.

This research is being funded by a grant provided by the College of Liberal Arts and Social Sciences at the University of North Texas.

Your participation in this research study involves providing information through one of two methods. First, you may be asked to provide demographic information and then complete a series of quantitative surveys that will administered at three different time points (the month prior to your graduation, one month following your graduation, and three months following your graduation); each survey will take approximately 15 minutes to complete. Second, you may be asked to undergo a structured interview that would take approximately 60-75 minutes to complete. You will not be asked to participate in both studies. Each method will allow you to provide information on your psychological well-being as it relates to your retirement from collegiate sport. More details on each method will be provided in the next section.
You might want to participate in this study if you are interested in sharing your thoughts, feelings, and experiences about retiring from collegiate athletics and how your sport retirement may be affecting your psychological well-being (e.g., mood, body image). The information you share may provide the foundation for the development of programming that can help future student athletes cope even better with retirement. However, you might not want to participate in this study if you do not have the time to complete either the three 15-minute surveys or one 60-75-minute in-depth interview.

You may choose to participate in this research study if you are a collegiate athlete who has either already retired from their sport, or will be retiring from their sport (and graduating) during Spring Semester 2020.

The reasonable foreseeable risks or discomforts to you if you choose to take part is experiencing negative emotions (e.g., sadness, frustration) while reflecting on your retirement from collegiate sport, which you can compare to the possible benefit of experiencing positive emotions (e.g., happiness, pride) and memories, as well as sharing your experiences, which can be used to inform university athletic departments and the NCAA about how to support retiring student athletes in the future. You will be eligible to receive compensation for participation.

DETAILED INFORMATION ABOUT THIS RESEARCH STUDY: The following is more detailed information about this study, in addition to the information listed above.

PURPOSE OF THE STUDY: The purpose of our study is twofold. First, we want to examine the mental health and psychological well-being of collegiate student athletes as they retire from their sport, graduate, and transition into their lives after sport. Second, we want to obtain an in-depth understanding of how already retired collegiate athletes have experienced their transition out of sport and how their retirement may be affecting their physical (e.g., relationship with exercise and physical activity) and psychological (e.g., body image) functioning. Your responses in these studies will provide helpful and needed information about how collegiate student-athletes experience, and deal with and function in, sport retirement, which can inform the development of future intervention programs to support student-athletes in their retirement from sport.

TIME COMMITMENT: In the first study (i.e., the survey study), soon-to-be retired student-athletes who elect to participate will complete the first (baseline) survey questionnaire approximately 4-6 weeks prior to their anticipated college graduation (which we expect to be in May/June 2020), the second survey (Time 1) approximately one month after graduation, and the third survey (Time 2) approximately three months after their graduation date. Therefore, data collection will occur at three different time points spanning approximately five months. Each data collection will require approximately 15 minutes.

In the second study (i.e., interview), already retired student athletes who participate will be asked to complete a brief demographic questionnaire (approximately ten minutes to complete), prior to the interview, which is expected to last approximately 60-75 minutes. Total participation in this interview portion of the study is expected to last approximately 1 to 1.5 hours. Based on your eligibility, you will be asked to participate in only one of the studies.

STUDY PROCEDURES: As a retired, or soon to be retired athlete, you will be asked to complete either a series of quantitative surveys or an in-depth structured interview. If you participate in the survey portion of this study, you will be provided, via email, a link to the secure website where the surveys will be housed. In addition, you will be given a unique code number that you will enter into the website at each of the three data collection points; the code number will be used to match your responses over time. You will not provide your name or other identifying information when completing these web-based surveys. One week prior to each data collection time point, we will email you directions for accessing the website, as well as your code number, so you may complete the survey; reminder emails will be sent three days and one day prior to the data collection as needed. Questions in the three surveys will assess your

psychological well-being (e.g., depression, anxiety) as well as how your coping with your retirement; you will have the option to skip any question if feel uncomfortable answering it.

If you participate in the structured interview, you will be sent an email directing you to a secure website where you will provide demographic data; you also will receive a unique code number to enter so we may match your demographic information to your responses from the interview. You will not provide any identifying information, such as your name, into the website. Once you have completed the demographic survey, we will contact you via email to schedule a convenient date and time for you to participate in the interview. In the interview, you will be asked a series of predetermined, open-ended questions about your experiences in retirement, including your relationships with food/eating and physical activity, body image, and coping with the transition to sport retirement. In addition to the predetermined set of interview questions, your responses may be restated by the interviewer for clarification, and you may be asked or encouraged to expand upon original responses.

AUDIO/VIDEO/PHOTOGRAPHY: Audio recording will be used only for the interview portion of the research study. Please indicate if you agree or do not agree to be audio recorded.

☐ **I agree** to be audio recorded during the research study.

☐ **I agree** that the audio recording can be used in publications or presentations.

☐ **I do not agree** that the audio recording can be used in publications or presentations.

☐ **I do not agree** to be audio recorded during the research study.

If you do not agree to be audio recorded during the research study, you may only be eligible to participate in the survey questionnaires. You may not be eligible to participate in the in-depth interview if you do not agree to be audio recorded.

The recordings will be kept with other electronic data in a secure UNT OneDrive account for the duration of the study.

POSSIBLE BENEFITS: Participants may experience benefits from participating in this study, including increased insight and understanding about themselves, their psychological well-being, and how they are coping with their transition out of sport. Participants may also experience positive mood states upon reflecting on their sport experience and sharing that via the surveys or interview. The information from both portions of this study may benefit future collegiate student athletes as programming and other support services may be developed and offered to them.

POSSIBLE RISKS/DISCOMFORTS: In sharing your personal experiences, thoughts, and feelings as you retired from your sport, you may experience some psychological discomfort (e.g., sadness, frustration, vulnerability) during the participation in this study. However, possible risks/discomforts are likely equivalent to feelings participants would experience in everyday life that are consistent with life transitions.

If you experience excessive discomfort when completing the research activity, you may choose to stop participating at any time without penalty. The researchers will try to prevent any problem that could happen, but the study may involve risks to the participant, which are currently unforeseeable. UNT does not provide medical services, or financial assistance for emotional distress or injuries that might happen from participating in this research. If you need to discuss your discomfort further, please contact a mental health provider, or you may contact the researcher who will refer you to appropriate services. If your need is urgent, helpful resources include the National Crisis Hotline at (800) 273-8255. NCAA athletes may also find additional resources here: http://s3.amazonaws.com/ncaa/files/ssi/mental-health/toolkits/student-athlete/story_html5.html

COMPENSATION: For each of the three online surveys that you complete, you will be entered into a drawing to win one of 32 $25 Amazon e-gift cards. For example, if you complete all three surveys (baseline, Time 1, Time 2), you will be entered into three different drawings for a $25 gift card. If you choose not to complete the online survey at any of the time points, you will not be eligible to participate in that drawing.

For the interview section, you will receive a $50 Amazon e-gift card upon completion of the interview.

Internal Revenue Service (IRS) considers all payments made to research subjects to be taxable income. Your personal information, including your name, address, and social security number may be acquired from you and provided to UNT System Tax Office for the purpose of payment. If your total payments for the year exceed $600.00, UNT will report this information to the IRS as income and you will receive a Form 1099 at the end of the year. If you receive less than $600.00 total payments in a year, you are personally responsible for reporting the payments to the IRS.

There are no alternative activities offered for this study.

CONFIDENTIALITY: Efforts will be made by the research team to keep your personal information private, including research study, and disclosure will be limited to people who have a need to review this information. All paper and electronic data collected from this study will be stored in a secure location on the UNT campus and/or a secure UNT server for at least three (3) years past the end of this research on a password protected computer in the PI's campus office. Research records will be labeled with a unique code number and the master key linking participant names with code numbers will be maintained in a separate and secure location.

The results of this study may be published and/or presented without naming you as a participant. The data collected about you for this study may be used for future research studies that are not described in this consent form. If that occurs, an IRB would first evaluate the use of any information that is identifiable to you, and confidentiality protection would be maintained. While absolute confidentiality cannot be guaranteed, the research team will make every effort to protect the confidentiality of your records, as described here and to the extent permitted by law. In addition to the research team, the following entities may have access to your records, but only on

a need-to-know basis: the U.S. Department of Health and Human Services, the FDA (federal regulating agencies), the reviewing IRB, and sponsors of the study.

CONTACT INFORMATION FOR QUESTIONS ABOUT THE STUDY: If you have any questions about the study you may contact Dr. Trent Petrie (trent.petrie@unt.edu), Karolina Wartalowicz (karolinawartalowicz@my.unt.edu), or Stephanie Barrett (stephaniebarrett@my.unt.edu). Any questions you have regarding your rights as a research subject, or complaints about the research may be directed to the Office of Research Integrity and Compliance at 940-565-4643, or by email at untirb@unt.edu.

CONSENT:

- Your signature below indicates that you have read, or have had read to you all of the above.
- You confirm that you have been told the possible benefits, risks, and/or discomforts of the study.
- You understand that you do not have to take part in this study and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits.
- You understand your rights as a research participant and you voluntarily consent to participate in this study; you also understand that the study personnel may choose to stop your participation at any time.
- By signing, you are not waiving any of your legal rights.

Please click the "I agree" button below if you are at least 18 years of age and voluntarily agree to participate in this study.

☐ I agree

Demographic Questionnaire

Please answer the following questions honestly. It is important that you answer every question. There are no "right" or "wrong" answers, so just do the best you can.

1. What is your age? _____

2. Race/ethnicity?

____Caucasian/White

____Hispanic/Latinx/Mexican American

____African-American/Black

____American Indian

____Asian American/Pacific Islander

____Other (specify:_____)

3. How would you identify your sexual orientation?

____Asexual

____Bisexual

____Gay

____Straight (heterosexual)

____Lesbian

____Pansexual

____Queer

____Questioning or unsure

____Same-gender loving

____Other, (please specify_____)

____Prefer not to disclose

4. What is your marital status?

____Single (never married)

____Married

____In a domestic partnership

____Divorced

____Widowed

5. Which of the following best describes your current living arrangements?

____Live alone

____Live with spouse/partner

____Live with parent/child

____Live with sibling

____Live with other relative (e.g., grandparent, aunt/uncle)

____Live with other non-relative (e.g., roommate)

6. Which of the following categories best describes your employment status?

____Employed part-time, working 1-39 hours per week

____Employed full-time, working 40 or more hours per week

____Not employed, looking for work

____Not employed, NOT looking for work

____Self-employed

____Student

____Not able to work

____Retired

7. What is your current occupation/profession? _____

8. What is your household income?

____Below $10K

____$10K – $49K

____$50K - $99K

____$100K - $150K

____Over $150K

9. What is the highest level of school you have completed or degree you have earned?

____Some college, no degree

____Associate degree

____Bachelor degree

____Master's degree

____Doctoral degree

10. What is your current height? _____ feet _____ inches

11. What is your current weight? _____lbs.

12. When did you do the BIM program?

13. Have you ever been diagnosed with an eating disorder (e.g., anorexia nervosa, bulimia nervosa, binge eating disorder) or body dysmorphia?

____Yes

____No

14. When were you diagnosed? _____

15. What diagnosis did you receive? _____

16. Have you ever received treatment (i.e., therapy, inpatient) for an eating disorder or body dysmorphia?

____Yes

____No

17. When did you receive treatment? _____

18. How long were you in treatment? _____

APPENDIX B

INTERVIEW GUIDE

Introduction

Thank you for taking the time to answer some questions about your experience in the Bodies in Motion (BIM) program, as well as your body image, eating habits, and psychological well-being as a retired female athlete. During the interview, I will ask you to reflect on the span of time from when you participated in BIM to the present day, and I may ask follow-up questions to ensure I fully understand your answer as you intend it. Questions will ask about both what (i.e., content) from the program was impactful, and how it impacted you. We will talk about a variety of different topics and your identity will remain confidential throughout this process, so my hope is that you will feel comfortable sharing your thoughts openly with me. Our interview should last between 60 and 90 minutes. If, at any point, you feel uncomfortable about the direction of the conversation, please let me know and we will move on to the next question. In the event that we encounter technical difficulties and get disconnected during the interview, I will end the meeting for us both and attempt to reconnect. You can re-enter the meeting by clicking on the Zoom link that was emailed to you. If that doesn't work, you and I will both try calling into the meeting using the dial-in phone numbers that were emailed along with the link. Does that make sense?

Before we start, I have two questions for you: (1) Do I have your verbal consent to record this conversation? And (2) Can you please provide me with the 5-digit ID number you were given prior to completing the Qualtrics survey?

Lastly, do you have any questions before we begin?

Great, let's get started.

First, I'd like to begin by getting some basic information about you.

1. Where did you go to school?
2. What sport did you compete in at _____ university/college?
3. What position did you play/What event did you compete in?
4. When did you complete BIM?

Now I'd like to ask you some more specific questions about your experience in the BIM program.

1. In what ways has the BIM program affected the way you have viewed your body since you completed it?
2. In what ways has the BIM program affected the way you have viewed yourself as an athlete since completing the program?
3. In what ways has the BIM program affected the way you have viewed yourself as a woman since completing it?
4. In what ways has the BIM program affected the way you have viewed society's ideas about beauty and appearance?
5. In what ways has the BIM program influenced messages you received about beauty and appearance from your sport environment?
6. In what ways has the BIM program affected how you think about your relationship with food/eating?
7. In what ways has the BIM program affected how you think about physical activity?
8. In what ways has the BIM program affected how you engage in physical activity?
9. Are there any other areas that BIM has impacted you, your life, or how you have come to view your body that we haven't talked about?

Now, I'd like to talk about what specific components of the BIM program you have found to be most and least helpful.

10. From your participation in the BIM program, what specific skills/lessons, if any, have you found to be most helpful?
    a. How have they been helpful to you?
    b. How have you put these into practice?
    c. How have you applied these in your life?

11. From your participation in the BIM program, what specific skills/lessons, if any, have you found to be least helpful?
    a. What about these did you find least helpful?

Now I'd like to ask you some questions about your retirement from collegiate sport.

12. When did you retire from your sport at the collegiate level?
    a. What were the reasons why you retired?
    b. How did you feel (and what did you think) when you retired from your sport?
    c. How did you cope with retiring from your sport?
    d. In what ways, if any, are you still involved in your sport? (e.g., actively competing, coaching)
13. In what ways, if any, did your participation in the BIM program affect how you felt about retiring from your sport? …how you coped with your retirement from sport?
14. In what ways, if any, did retiring from sport influence how you felt about your experience in the BIM program?

[Exploratory questions]

15. How will you continue, if at all, to use what you learned in BIM as you move forward in life?
16. What advice would you give to current female athletes who may be struggling with body image concerns or negative self-esteem?
    a. What messages, if any, would you give them about your experience in BIM?
17. What, if any, thoughts or feelings have you had about yourself or your body as a result of COVID?

Thank you so much, this concludes our interview. Before we end, is there anything else you'd like to tell me about your experience in BIM as it relates to your body image, retirement from collegiate sport, or overall view of yourself?

Can you think of others on your team who completed BIM or were in your BIM group who may be willing to participate in this study? Would you be willing to give me their names/emails?

Thank you again, take care, goodbye.

APPENDIX C

DEBRIEF STATEMENT

Debrief Statement

Thank you for your participation in this study. If, after completing this survey, you are experiencing any distress and would like to speak with someone about your thoughts and feelings, you may consider seeking assistance from the following sources:

1. A mental health professional in the community where you currently reside;
2. The sport psychologist or psychologist/counselor at the college/university where you are a student-athlete;
3. The National Crisis Hotline at (800) 273-8255; or
4. Emergency services at 911.

NCAA athletes may also find additional resources here:
http://s3.amazonaws.com/ncaa/files/ssi/mental-health/toolkits/student-athlete/story_html5.html

APPENDIX D

EXTENDED LITERATURE REVIEW

Female collegiate athletes are a subset of the athlete population that have been identified as a group at risk of developing eating disorders (EDs) and unhealthy weight control behaviors (Byrne & McLean, 2002; Greenleaf et al., 2009; Petrie & Greenleaf, 2007), particularly because of the unique combination of general societal (Esnaola et al., 2010) and sport-specific (e.g., Anderson et al., 2011; Torstveit et al., 2008) pressures to maintain a lean, fit, strong body that dually looks good and performs well. Researchers have shown that the more female athletes experience these two types of pressures, which originate from important social agents in the general (e.g., Thompson et al., 1999) and sport (e.g., Anderson et al., 2011) environments, the more likely they are to internalize ideals about beauty and body size, shape, and weight into their beliefs and use them as the standard to which their own bodies are compared. When unrealistic beauty and body standards are internalized, and physical comparisons are made to these standards, athletes may become dissatisfied by the discrepancies they find between their own bodies and the ideals. Such dissatisfaction is hypothesized to lead to increased negative affect, greater intention to restrict calories, and bulimic symptomatology (Anderson et al., 2011; Petrie & Greenleaf, 2012).

The relationships of general sociocultural and sport-specific pressures, both direct and indirect, to disordered eating behaviors and ED symptomatology have been identified and supported in qualitative (e.g., Kerr et al., 2006; Muscat & Long, 2008), cross-sectional (e.g., De Bruin et al., 2007; Martinsen et al, 2010), and longitudinal (e.g., Doughty & Hausenblas, 2005; Anderson et al., 2012; Krentz, & Warschburger, 2013; Voelker et al., 2016) studies. Researchers have used such data to justify and guide the development of interventions that target these variables (i.e., pressures, internalization, body dissatisfaction, negative affect) to improve body image and reduce ED risk among female athletes. The most empirically supported ED

prevention programs (see Becker & Stice, 2017) are interactive, experiential, multi-session, gender-matched, and facilitated by external professionals (Stice et al., 2007; Bar et al., 2016). These interventions are also typically grounded in cognitive dissonance theory (Festinger, 1957), which helps women challenge sociocultural messages regarding beauty, and have been shown to reduce internalization, improve body image, and lead to reductions in ED symptomatology over time (Stice et al., 2007). Despite the reported efficacy of cognitive dissonance-based programs, researchers have argued that their effects are small to moderate (Le et al., 2017) and thus other psychological perspectives needed to be considered. Consistent with this perspective, mindfulness-based interventions have been developed and tested in female non-athlete samples with promising results for ED prevention (Atkinson & Wade, 2015).

Among female athletes, there have been few studies that have examined the efficacy of intervention programs (Bar et al., 2016; Becker et al., 2012; Voelker et al., 2019), and these studies have been limited by the absence of a wait-list control group (Becker et al., 2012), limited duration of follow-up (e.g., Voelker et al., 2019), and a general lack of qualitative evaluation (Bar et al., 2017). Despite these limitations, prevention programs implemented with female athletes have yielded promising early results. Specifically, bulimic symptomatology, weight concerns, and negative affect have been significantly reduced at both short- and long-term follow-up in athlete-specific intervention studies (e.g., Becker et al., 2012), and significant reductions in internalization following intervention have maintained over time (Voelker et al., 2019). Most recently, Voelker et al. (2020) conducted a preliminary qualitative evaluation of Bodies in Motion, a selective, primary ED prevention program designed specifically for female athletes, at post-intervention and 3-4-month follow-up. Results across both time points indicated that the program effectively helped female athletes become more aware of how they see

themselves in relation to their bodies, develop positive beliefs and attitudes about their bodies, and learn and apply new psychological skills to relate to themselves more positively.

An important consideration in the long-term effects of ED prevention programs is the potential for female athletes to retire from their sport after having completed the program. The transition to sport retirement is a stressful process for many athletes (Alfermann, 2000; Grove et al., 1997; Werthner & Orlick, 1986), which may be characterized by weight gain, degradation of physical capabilities, and loss of muscle mass (Wylleman et al., 1993). These post-retirement changes may contribute negatively to athletes' body image (i.e., body dissatisfaction) and psychological distress (Papathomas et al., 2018; Plateau et al., 2017a; Stephan et al., 2007), as well as to their relationship with food (e.g., dietary restriction, laxatives/diet pills, excessive exercise; Plateau et al., 2017b; Stirling et al., 2012).

Previous research has consistently demonstrated support for the relationships between psychosocial factors (i.e., internalization, body dissatisfaction, negative affect) and ED symptomatology, as well as the effectiveness of prevention programs for reducing ED risk in female athletes and non-athletes. However, the few studies conducted specifically with female athletes have been limited in several ways (e.g., methodology, small sample size; Bar et al., 2016). Furthermore, despite the recognition that the effects of brief prevention programs continue to be effective over time (e.g., Becker et al., 2012; Bar et al., 2017, Voelker et al., 2019) and that athletes who retire from their sport continue to struggle with body dissatisfaction and ED symptomatology (e.g., Kerr & Dacyshyn, 2000; Greenleaf, 2002; Stirling et al., 2012), no study has examined athletes who have participated in such prevention programming as they have moved into sport retirement to determine if effects last beyond their competitive tenure.

Eating Disorders (ED) and Subclinical Eating Disorders: Definitions and General Prevalence

The *Diagnostic and Statistical Manual of Mental Disorders (DSM-5*) classifies EDs into the following types: anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and other specified/unspecified feeding or eating disorder (OSFED; American Psychiatric Association [APA], 2013). In addition to numerous physiological (i.e., cardiovascular abnormalities, nutrient deficiencies) and psychological comorbidities (i.e., anxiety, depression), eating disorders warrant particular concern for their high risk of mortality; standardized mortality ratios (the ratio of observed deaths in the study population to expected deaths in the population of origin) attributed to eating disorders have ranged from 1.9 to 9.6 (Smink et al., 2012).

Anorexia Nervosa

Diagnostic features of AN include restriction of energy intake leading to significantly low body weight for age, sex, physical health, and developmental trajectory; intense fear of gaining weight; and misperceptions about how one's body weight and/or shape are experienced (APA, 2013). For adults, severity of symptoms is based on current body mass index (BMI) and is graded as *mild* (BMI $\geq$ 17 kg/m^2), *moderate* (BMI of 16-16.99 kg/m^2), *severe* (BMI of 15-15.99 kg/m^2), or *extreme* (BMI < 15 kg/m^2). AN has been associated with anxiety disorders, mood disorders, developmental disorders (i.e., autism spectrum, attention-deficit hyperactivity disorder [ADHD]; Treasure, Claudino, & Zucker, 2010), and substance misuse (Hudson et al., 2007). AN has also been associated with physiological effects resulting from extreme dieting, including gastrointestinal disturbances, cardiovascular abnormalities (e.g., hypotension, arrhythmias), nutrient deficits, electrolyte imbalances, amenorrhea, loss of bone mineral density, hypersensitivity to cold, and dry skin (Winston, 2004). Prevalence rates among women using *DSM-5* criteria for AN have ranged from 0.8% to 4.3% (Stice et al., 2013; Smink et al., 2014)

Bulimia Nervosa

BN is characterized by episodes of binge eating (i.e., eating, in a 2-hour period, an amount definitively larger than what most individuals eat in a similar amount of time) followed by inappropriate compensatory behaviors (e.g., self-induced vomiting, excessive exercise, laxatives/diet pills) to lose weight or avoid weight gain occurring, on average, at least once per week for 3 months, as well as self-evaluation disproportionately linked to body weight and shape (APA, 2013). Severity of current symptoms is based on the frequency of inappropriate compensatory behaviors and is graded as *mild* (1 to 3 episodes of compensatory behaviors per week), *moderate* (4 to 7 episodes per week), *severe* (8 to 13 episodes per week), or *extreme* (14 or more episodes per week). BN has been associated with the following psychological comorbidities: depression, bipolar disorder, posttraumatic stress, specific phobia, social phobia, oppositional defiance, ADHD, and substance misuse (Hudson et al., 2007; Treasure et al., 2010). Individuals with BN can experience physiological distress usually resulting from purging behaviors, including dental erosion, dehydration, menstrual irregularities, kidney failure, electrolyte imbalances, nutrient deficiencies, and inflammation of the esophageal lining (Winston, 2004). Prevalence rates among women using *DSM-5* criteria for BN have ranged from 0.8% to 2.6% (Smink et al., 2014; Stice et al., 2013).

Binge Eating Disorder

Features of BED include binge eating episodes and subsequent distress with the absence of compensatory weight control behaviors (e.g., purging) that occurs, on average, at least once (i.e., one episode) per week for 3 months. Diagnostic criteria for binge eating episodes include at least three of the following: eating alone because of embarrassment related to the quantity of food consumed; eating faster than normal; eating large amounts of food when not hungry; eating

to the point of physical discomfort; and feeling depressed, disgusted, or guilty after eating. Severity of current symptoms is based on the frequency of binge eating episodes and is rated as *mild* (1 to 3 episodes per week), *moderate* (4 to 7 episodes per week), *severe* (8 to 13 episodes per week), or *extreme* (14 or more episodes per week). BED has been associated with depression, anxiety disorders, personality disorders (e.g., borderline, avoidant), oppositional defiance, ADHD, and substance misuse (Hudson et al., 2007), and can lead to physical complications, including insomnia, obesity, irritable bowel syndrome, fibromyalgia, and physical inactivity (Javaras et al., 2008). Prevalence rates among women using *DSM-5* criteria ranged from 0.1% to 3.6% (Le Grange et al., 2012).

Other Specified/Unspecified Feeding or Eating Disorders

A diagnosis of OSFED is assigned in cases of clinically significant eating disturbances that do not meet full criteria for any of the above eating disorders (APA, 2013). Like AN, BN, and BED, OSFED is accompanied by clear psychological distress resulting from eating disturbances, but the presenting symptoms and information available are insufficient to define a clear diagnosis. Physiological and psychological comorbidities vary in this category depending on the predominant symptoms displayed (i.e., consistent with AN, BN, or BED). Prevalence rates among women using *DSM-5* criteria ranged from 0.8% to 14.2% (Smink et al., 2014; Stice et al., 2013).

Subclinical Disordered Eating

Subclinical disordered eating (DE) broadly encompasses maladaptive eating behaviors (Bonci et al., 2008) below the clinical threshold for diagnosis of an eating disorder (e.g., Beals, 2000; Greenleaf et al., 2009). This level of symptomatology has been conceptualized along a continuum from dieting to clinical EDs (Sundgot-Borgen & Torstveit, 2010), and researchers

have identified that symptomatic individuals often report heightened body image concerns and maladaptive eating behaviors and attitudes similar to those who meet clinical ED diagnostic criteria (e.g., Cohen & Petrie, 2005; Peck & Lightsey Jr., 2008). DE may include disturbances in eating behaviors and inaccurate perceptions of body weight and/or shape, but is distinct from OSFED because they are less severe than clinical EDs in frequency or intensity of symptoms. Researchers have consistently reported higher prevalence rates for subclinical DE than clinical eating disorders (Cohen & Petrie, 2005; Peck & Lightsey Jr., 2008), ranging from 39% to 51.2% (Cohen & Petrie, 2005; Tylka & Subich 2002).

EDs and Female Athletes

Prevalence

Data reported here reflect research using DSM-4-TR criteria (unless otherwise noted) due to lack of published findings using *DSM-5* criteria in athlete samples. Overall, prevalence research among the female athlete population has found rates for clinical disorders ranging from 2.0%-32.8% (Anderson et al., 2011; Anderson & Petrie, 2012, Bratland-Sanda & Sundgot-Borgen, 2013; Greenleaf, et al., 2009, Toro et al., 2005); the large range in prevalence rates has been due to the measures used to classify EDs (i.e., self-report versus structured clinical interview). For example, Greenleaf et al. (2009) administered the self-report Questionnaire for Eating Disorder Diagnosis (QEDD; Mintz et al., 1997) to determine prevalence rates in a sample of 204 female collegiate athletes. They found that 2.0% of their sample met diagnostic criteria for an eating disorder based on their QEDD responses (Greenleaf et al., 2009). These results are consistent with Carter and Rudd (2005), who found 2.0% of female NCAA Division I athletes met criteria for a clinical eating disorder using the same measure. However, Sanford-Martens et al. (2005) also administered the QEDD to a sample of 158 female collegiate athletes and found

5.1% reported symptoms consistent with a clinical eating disorder; all were categorized as EDNOS (classified as OSFED in the *DSM-5*; APA, 2013).

Toro et al. (2005) found higher prevalence rates using the Eating Attitudes Test (EAT; Garner et al., 1982) and the Eating Disorders Evaluation Questionnaire (i.e., based on DSM-III-R criteria for AN and BN; Spanish acronym CETCA; Toro et al. 2005) to assess ED prevalence in a sample of 283 Spanish elite female athletes. They found 11.4% scored above the clinical cutoff of 30 on the EAT, whereas 22.6% met diagnostic criteria for AN or BN according to the CETCA (Toro et al., 2005). Although measures that use cutoff scores (i.e., EAT) are popular and easy to use, the lack of connection between a score and a diagnosis limits what the prevalence rates for clinical eating disorders actually represents and may contribute to the variability in reported prevalence rates. Furthermore, the use of self-report measures is subject to social desirability bias, despite efforts to ensure anonymity and encourage honest responding (e.g., Greenleaf et al., 2009), which may limit the validity of prevalence rates using these measures. Therefore, accurate data regarding the prevalence of clinical EDs among female athletes may be better obtained via more reliable methods, such as structured clinical interviews.

In one of the earliest studies to use clinical interviews (using DSM-III-R criteria) to diagnose EDs, 18.0% of a sample of elite female Norwegian athletes (n = 522) were classified as clinically eating disordered (Sundgot-Borgen, 1993). In a study of 572 elite female Norwegian athletes using structured clinical interviews to assess symptomatology, 16.0% were classified as clinically eating disordered. Specifically, 2.0% were classified as AN, 6.0% were classified as BN, and 8.0% were classified as EDNOS; all prevalence rates were greater than those found in a matched sample of female non-athletes (Sundgot-Borgen & Tortsveit, 2004). In a third study using structured clinical interviews with 669 adolescent and adult female elite athletes in

Norway, 32.8% met diagnostic criteria for clinical EDs; 4.8% were categorized as AN, 8.1% as BN, and 19.9% as EDNOS (Torstveit et al., 2008). Byrne and McLean (2002) classified female athletes into "thin-build" (i.e., gymnastics, swimming, long-distance running) and "normal-build" (i.e., tennis, volleyball, basketball) sports, and used a structured diagnostic interview (Composite International Diagnostic Interview [CIDI]; World Health Organization, 1990) to classify clinical EDs according to DSM-IV criteria. Among thin-build athletes, they found 5.0%, 10.0%, and 16.0% met diagnostic criteria for AN, BN, and EDNOS, respectively. Among normal-build athletes, 2.0% were classified as BN and 6.5% were classified as EDNOS; no athletes in this group met diagnostic criteria for AN (Byrne & McLean, 2002).

Despite the range in prevalence rates reported, the literature indicates that clinical EDs are altogether less prevalent than subclinical disorders (i.e., disordered eating behaviors, pathogenic weight control behaviors) among female athletes (e.g., Carter & Rudd, 2005; Greenleaf et al., 2009; Sungot-Borgen & Torstveit, 2004). However, prevalence rates for subclinical disordered eating behaviors are worth reporting because research indicates that clinical and subclinical athletes do not differ significantly on measures of body image concerns, internalization of the thin ideal, negative affect, and sociocultural pressures to be thin; both groups indicate significantly greater distress than female athletes who are asymptomatic (Petrie et al., 2009a). Therefore, female athletes categorized as subclinical may experience just as much distress as clinically disordered female athletes even though their symptoms do not rise to meet full diagnostic criteria.

The literature suggests prevalence rates for subclinical eating disorders range from 2.9%-49.2% (Anderson & Petrie, 2012; Beals & Hill, 2006; Beals & Manore, 2002; Carter & Rudd, 2005; Kato et al., 2011; Prather et al., 2016; Reinking & Alexander, 2005; Sanford-Martens et

al., 2005; Soubliere & Gitimu, 2012; Torstveit et al., 2008), with several factors contributing to the variability in reported rates. Similar to clinical EDs, prevalence rates vary depending on the measures used to assess subclinical disordered eating. For example, Johnson et al. (1999) used three subscales of the Eating Disorder Inventory (EDI) to identify subclinical rates for AN and BN at 2.85% and 9.2%, respectively. Conversely, Beals and Hill (2006) used a similar approach (i.e., EDI symptom checklist) and reported subclinical prevalence rates of 25% in a sample of female collegiate athletes. Studies using more reliable measures, such as structured clinical interviews and self-report measures based on DSM-IV criteria (e.g., QEDD), report similar variability in prevalence rates. For example, Sanford-Martens et al. (2005) reported prevalence rates for subclinical disordered eating at 14.5% in a mixed-sport sample of 158 female collegiate athletes using the QEDD, while Greenleaf et al. (2009) reported prevalence rates at 25.5% in a sample of 204 female collegiate athletes from a variety of sports using the same measure.

Additionally, the sample of female athletes used may contribute to the variability in reported prevalence rates. Several studies have been conducted with mixed-sport samples (e.g., golf, softball, ice hockey, gymnastics) of female collegiate athletes (e.g., Beals & Manore, 2002; Kato et al., 2011; Soubliere & Gitimu, 2012), and the results indicate the prevalence of subclinical disordered eating ranges from 14.3% to 49.2%. When studies have examined single sport or sport group samples to assess subclinical disordered eating, prevalence rates also appear to vary substantially. In a sample of 84 NCAA Division I female athletes at the same university, Reinking and Alexander (2005) found prevalence rates of 2.9% among non-lean sport (i.e., basketball, soccer, softball, field hockey, volleyball) athletes; however; among lean-sport (i.e., swimming, cross country) athletes, 25% scored above the cutoff for subclinical disordered eating. Similarly, Anderson and Petrie (2012) reported subclinical disordered eating prevalence

rates in a sample of 414 female collegiate athletes in at-risk sports (i.e., gymnastics, swimming/diving) of 20.9% among swimmers and divers and 28.9% among gymnasts.

Although prevalence rates for clinical eating disorders and subclinical disordered eating among female collegiate athletes vary based on the measures used to determine prevalence and the composition of the sample used (i.e., single-sport versus mixed-sport), the research demonstrates that female athletes experience more clinical EDs and disordered eating than their non-athlete counterparts (Sundgot-Borgen & Torstveit, 2004). Furthermore, female athletes appear to experience higher levels of subclinical disordered eating than clinical EDs (Anderson & Petrie, 2012), which may be due, in part, to the frequency of pathogenic weight control behaviors being used among this population.

Pathogenic Weight Control Behaviors

Female athletes engage in unhealthy behaviors aimed to control weight, such as dieting and excessive exercise (Anderson & Petrie, 2012; Beals & Manore, 2002; Carter & Rudd, 2005; De Bruin et al., 2007; Rosen & Hough, 1988; Rosen et al., 1986). For example, in a sample of 182 female collegiate athletes, Rosen et al. (1986) reported 32% engaged in at least one pathogenic weight control behavior (e.g., self-induced vomiting, laxatives, bingeing, diet pills). Similarly, in a study of 42 female athletes in a lean-body sport (i.e., gymnastics), Rosen and Hough (1988) used survey methods to determine that all participants engaged in some form of dieting and 62% used at least one pathogenic weight control behavior, such as using laxatives and self-induced vomiting. More recently, in a study of female collegiate athletes from a variety of sports, Greenleaf et al. (2009) determined that the athletes engaged in the following weight control behaviors: binge eating at least once per week (18.6%), exercising at least 2 hours per day to burn calories (25.5%), using laxatives 1 to 2 times per week (1.0%) or diuretics 2 to 3

times per month (1.5%), vomiting at least 2 to 3 times per month (2.9%), and fasting or adhering to strict diets at least twice in the previous year (15.7%).

In a study of female collegiate athletes from 15 different sports, 67% reported intentionally limiting their food choices (e.g., reduce fat/carbohydrate intake) and 42% limited foot intake specifically for the purpose of controlling weight (Beals & Manore, 2002). They also found that 11% of their sample engaged in fasting, 6% endorsed binge eating, 15% adhered to low-calorie diets, 7% vomited to control weight, and 4% and 8% used laxatives and diet pills, respectively. When comparing athletes from different types of sports, they found that athletes who participated in aesthetic sports (e.g., gymnastics, diving, cheerleading) reported greater use of pathogenic weight control behaviors and displayed significantly more eating pathology than athletes from endurance (e.g., basketball, field hockey, soccer) or team sports (e.g., softball, volleyball, tennis). Consistent with Beals and Manore, Carter and Rudd (2005) found that athletes in sports that emphasized a lean physique, such as gymnastics, rowing, and swimming, reported significantly higher rates of pathogenic weight control behaviors than female athletes in non-lean sports (e.g., basketball, golf, softball). Studies of female athletes from the same sport have yielded similar findings. In a sample of 68 elite and non-elite gymnasts, de Bruin et al. (2007) found they dieted and used pathogenic weight control behaviors (i.e., self-induced vomiting) significantly more than a non-athlete control group, even after controlling for body mass index (BMI).

Summary

Female athletes, like non-athletes, suffer from clinical, and subclinical, EDs and use a range of pathogenic weight control behaviors; prevalence rates, however, vary across these categories, with subclinical EDs and weight control behaviors occurring far more often than

clinically diagnosable eating disorders among female athletes (Carter & Rudd, 2005; Greenleaf et al., 2009; Sungot-Borgen & Torstveit, 2004). However, similar to clinical disorders, subclinical eating concerns are associated with similar health risks (e.g., chronic fatigue, anemia), psychological distress, and reduction in performance. Therefore, it is important to understand the factors that contribute to the development and maintenance of not only clinical eating disorders, but concerns that exist at the subclinical level.

Sociocultural Models of Disordered Eating

There are several well-accepted theoretical models that address the etiology of eating disorders in women, including those that emphasize sociocultural factors such as body objectification (Moradi, 2010; Polivy & Herman, 2002; Striegel-Moore & Bulik, 2007). According to the sociocultural perspective, self-perceptions and definitions of body attractiveness are contextual and vary by culture (Cash & Pruzinsky, 2002). Western societies promote cultural expectations of physical beauty for women, known as the feminine ideal, where slenderness is positively associated with attractiveness (Swami, 2015). These societal messages and expectations are internalized (i.e., cognitively endorsed) and motivate people to engage in behaviors that will move them closer to the ideal (Thompson et al., 1999). However, the unattainability of this ideal for most individuals can have negative psychological (i.e., negative affect, body dissatisfaction) and behavioral (i.e., dietary restraint) consequences, which can lead to disordered eating behaviors (Thompson & Stice, 2001).

Sociocultural Pressures

The emphasis on thinness in society is generated and reinforced by three primary sources: media (e.g., television/film, social media, advertisements, magazines), parents, and peers (Thompson et al., 1999; Thompson et al., 2012). Media promotes the Western beauty standard

and often celebrates models and celebrities who do not represent the body size, shape, and weight of most women, creating an unreachable standard (Polivy & Herman, 2002). Furthermore, social media (e.g., Facebook, Instagram) has recently been identified as an additional source of appearance-related pressures, and findings suggest that social media use can negatively impact appearance-related beliefs and worries (i.e., increased internalization, greater self-objectification, lower perceived physical attractiveness; Fardouly et al., 2018; Mills et al., 2018). Families and peers further perpetuate the societal standard through their emphasis on attaining a certain body size/shape and weight (e.g., modeled behaviors, diet talk), which promotes the internalization of such messages (Keery et al., 2005). Further, such pressures can be communicated through teasing, where family members and/or peers make negative comments about appearance, weight, eating, etc. Such teasing has been related to drive for thinness, body dissatisfaction, weight concerns, eating disturbances, bulimic behaviors, and depressive symptoms (Eisenberg et al., 2003; Keery et al., 2005).

Internalization of the Thin-Ideal

Internalization of the thin-ideal represents the extent to which individuals believe and invest in the socially defined standards of beauty (Heinberg & Thompson, 1995; Thompson & Stice, 2001) and occurs when women cognitively endorse societal messages about appearance, attractiveness, food, eating, weight, and what it means to be feminine, and perceive them to be factual and unchanging (Hesse-Biber et al., 2006). Women who spend considerable time consuming messages that promote the thin-ideal (i.e., through magazines, media images) have reported higher levels of internalization than women who are not consistently exposed to such messages (Brown & Dittmar, 2005; Grabe et al., 2008). Internalization is the mechanism through which exposure to all sociocultural pressures influences the development of body image

concerns (Moradi et al., 2005; Thompson & Stice, 2001) and, ultimately, eating pathology (Haug et al., 2001; Thompson & Gray, 1995). Women who internalize culturally derived and media-promoted body and beauty standards develop a cognitive schema against which their own bodies can be compared and evaluated (McCabe & Ricciardelli, 2001; Polivy & Herman, 2002; Stice, 2002). The discrepancies that often result from comparison of oneself to the ideal may lead women to experience heightened negative perceptions and emotional disturbances regarding their body, weight, shape, appearance, and physical attractiveness (Altabe & Thompson, 1992). Specifically, the greater the discrepancy between women's perceptions of their bodies and the ideal (i.e., how they believe they should look; Higgins, 1987), the more dissatisfied they will be with their bodies and appearance.

Body Dissatisfaction, Negative Affect, and Dietary Restraint

Body dissatisfaction, or the negative attitude and dislike that is held toward the body's shape, size and appearance, is increased by internalization of the thin-ideal (Polivy & Herman, 2002) and has been identified as a causal risk factor in the development of eating disorders in women (Stice, 2002; Stice & Shaw, 2002). Body dissatisfaction leads to eating disorder symptomatology both directly and indirectly, via dietary restraint and negative affect (McCabe & Ricciardelli, 2001; Polivy & Herman, 2002; Stice, 2002; Stice & Shaw, 2002; Stice et al., 1998). The indirect influence of body dissatisfaction on eating disorder symptomatology also is referred to as the dual pathway model (e.g., Stice, 2001; Stice & Agras, 1998). In the affect pathway, body dissatisfaction leads to persistent, intense states of negative emotions (e.g., shame, guilt, anger, sadness, stress) due to the emphasis on appearance as an integral component of the self-evaluation of women in Western culture (Stice, 2001). As women are faced with the real-ideal discrepancies that exist regarding appearance and become more dissatisfied with their bodies,

these negative feelings generalize to how they view themselves as people. To cope with these general negative feelings, women may begin to eat for emotional rather than physical reasons, which may include episodes of unhealthy eating, such as bingeing. That is, they begin to use food not as a fuel for their bodies, but rather as a means to dampen the negative emotions they are experiencing (Heatherton & Baumeister, 1991; Hilbert & Tuschen-Caffier, 2007; Stice, 1998a; 2001).

In the dietary restraint pathway, body dissatisfaction leads to restricting how much, and how often, individuals eat. The belief is that by restricting caloric intake, women can modify their body size and shape, and thus more closely approximate the societal appearance ideal. (Stice, 1994). Unfortunately, such dietary restraint is more likely to result in episodes of binge eating rather than weight loss as hunger overrides the desire to restrict food (Mitchell et al., 1986; Stice, 2001; Stice & Agras, 1998). Although either one of these pathways (i.e., dietary restraint, negative affect) may be sufficient to produce bulimic symptomatology, research suggests women may experience simultaneous changes in negative affect and dietary restraint, suggesting a reciprocal cycle between the two. This cycle can begin when body dissatisfied individuals either experience negative emotions or attempt to restrict calories due to viewing their bodies as not good enough, both of which can result in unhealthy eating behaviors (i.e., bingeing) to relieve hunger or distract, comfort, or regulate negative feelings (Heatherton & Baumeister, 1991; Stice, 2001). Ultimately, the cycle is maintained by continuing to experience body dissatisfaction and subsequently engage in behaviors symptomatic of an eating disorder. The dual-pathway model has been tested in samples of adolescent, community, overweight, and weight-preoccupied women, and both pathways have been supported in the literature (Engler et al., 2006; Rohde et al., 2015; Stice et al., 2008; Stice et al., 2011).

Summary

Sociocultural perspectives on disordered eating (e.g., Stice, 2001; Stice & Agras, 1998) suggest that risk for ED symptoms begins with the exposure to appearance-related pressures that emanate from various sources (e.g., media, social media, parents, peers; Thompson et al., 1999). When individuals believe and invest in the socially constructed appearance ideals promoted by their environment, they internalize a standard to which their own bodies are subsequently compared (e.g., Polivy & Herman, 2002). Because the societal ideal is largely unattainable for most women, the result is increased body dissatisfaction, which can lead to increased negative affect and/or dietary restraint, all of which combines to increase risk for ED symptomatology (e.g., McCabe & Ricciardelli, 2001; Stice, 2002; Stice & Shaw, 2002).

Psychosocial Predictors of Eating Disorders in Athletes

In adopting sociocultural approaches in ED research with athletes, researchers have acknowledged the importance of general sociocultural appearance ideals but emphasized the pressures that athletes experience within the sport environment regarding weight, body, physique, eating, and performance (e.g., Anderson et al., 2011; Petrie et al., 2009a, Petrie, Greenleaf, Reel, & Carter, 2009b; Voelker et al., 2014). Based on existing sociocultural models (e.g., Jacobi et al., 2004; Moradi, 2010; Polivy & Herman, 2002; Stice, 2001; Striegel-Moore & Bulik, 2007), Petrie and Greenleaf (2007, 2012) suggested that similar factors, such as sociocultural pressures (e.g., media, society, peers), internalization (i.e., internal belief that one's body should reflect societal appearance ideals), body dissatisfaction, negative affect (e.g., guilt, anger, shame, anxiety), and dietary restraint (i.e., dieting, weight control behaviors), increased their risk of developing ED symptomatology. However, they also included athletes' experience of sport-specific pressures, arguing that the messages that they receive from within the sport

environment (e.g., from coaches, teammates, etc.) were even more influential than general societal messages because of the insular nature of the sport environment and the power that coaches have in athletes' lives.

In the sport environment, athletes experience pressures about their body weight, size, shape, composition, and appearance from coaches, support staff (e.g., strength and conditioning coaches, athletic trainers), judges, and fans. Although pressures can vary across sports, common sport-specific pressures include body-revealing or form-fitting uniforms, messages about lower weight improving sport performance, and weight classifications required for sport participation (Petrie & Greenleaf, 2012; Thompson & Sherman, 2010). Particularly in lean or aesthetic sports (i.e., ballet, gymnastics), athletes are subjected to specific sport demands in which their bodies are evaluated and pressures to diet, lose weight, or maintain a low body weight can trigger disordered eating and pathogenic weight control behaviors, and ultimately lead to clinical eating disorders (Reel et al., 2010). Researchers have examined potential weight pressures in synchronized skating, gymnastics, cheerleading, and swimming, and found the frequency of pressures experienced by female athletes in these sports ranged from 58% to 84% (Ferrand et al., 2007; Greenleaf, 2004; Kerr et al., 2006; Reel & Gill, 1996, 2001). In the development of a measure of weight pressures in sport, Reel et al. (2010) sampled 204 NCAA Division I female athletes from a variety of sports (e.g., basketball, soccer, track) identified 16 types of weight pressure in sport that represent four broad domains: (a) pressures for coaches/team/sport; (b) self-consciousness of weight and appearance; (c) importance of weight and appearance; and (d) weight limit (i.e., requirement to participate in sport). The strongest weight pressures identified were teammates noticing weight gain (36.8%), the importance of body weight and appearance from friends outside of sport (36.3%) and feeling self-conscious in the team uniform (34.3%).

The frequency with which athletes experience such pressures underscores their relevance in understanding how athletes become body dissatisfied and engage in unhealthy eating (Petrie & Greenleaf, 2007; 2012).

Support for both direct and indirect relationships among variables in the model and ED symptomatology has been found in cross-sectional (e.g., Martinsen et al., 2010; Petrie et al., 2009a, 2009b), longitudinal (e.g., Doughty & Hausenblas, 2005; Anderson et al., 2012; Krentz & Warschburger, 2013; Voelker et al., 2016), and qualitative (e.g., Kerr et al., 2006; Muscat & Long, 2008) studies. For example, in cross-sectional studies, researchers have found no significant differences between female athletes with clinical EDs and those who are symptomatic (i.e., subclinical disordered eating) on measures of body image, eating attitudes and behaviors, and psychological well-being; both groups differed significantly from female athletes categorized as asymptomatic. (Anderson et al., 2011; Petrie et al., 2009a, 2009b). In a similar study, Petrie et al. (2009b) sampled 204 female collegiate athletes representing a variety of sports (e.g., rowing, soccer, tennis) from three universities across the United States. They found significant differences between the athletes who were classified as eating disordered (i.e., clinical and subclinical) and those who were asymptomatic on measures of appearance orientation and exercising to improve appearance and attractiveness. That is, athletes were more likely to be classified in the disturbed eating group if they were focused on their appearance, exercised with the intention of being more attractive, and had lower levels of self-esteem.

In another set of cross-sectional studies, Voelker et al. (2014) sampled female figure skaters (n = 272) aged 12 to 25 years on measures of sport-specific weight pressures, general and sport-specific body satisfaction, self-esteem, and disordered eating (i.e., EAT-26). After controlling for the effects of age and BMI, being self-conscious of weight and appearance (β =

.42, p = .001), sport-specific body dissatisfaction (β = -0.27, p = .002), and general body dissatisfaction (β = .43, p = .001) were significant predictors of disordered eating. Similarly, Greenleaf et al. (2010) examined the relationships among internalization, body satisfaction, dietary restraint, and negative affect to bulimic symptomatology in a mixed sport sample of female NCAA Division I athletes (n = 204). They found that the psychosocial variables (i.e., internalization, body satisfaction, dietary restraint, negative affect) explained 42% of the variance in bulimic symptomatology after controlling for social desirability and BMI. Finally, Anderson et al. (2011) directly tested the Petrie and Greenleaf (2007) model through structural equation modeling. In their sample of 414 athletes, they found support for all the variables in the model, and that the direct and indirect pathways accounted for 55% to 58% of the variance in bulimic symptoms. Across these cross-sectional studies (Anderson et al., 2011; Martinsen et al., 2010; Petrie et al., 2009a; 2009b; Voelker et al., 2014, there has been consistent support for (a) the similarity, in terms of psychosocial ED predictors (e.g., pressures, internalization, body dissatisfaction), between athletes who are classified as ED and subclinical, and (b) athletes who report eating pathology, whether at the clinical or subclinical level, demonstrate significantly more distress than those who are asymptomatic. The use of cross-sectional methods and a reliance on self-report, quantitative measures limits what can be concluded, (e.g., association vs. prediction) and how the data can be interpreted. Other methodologies, such as qualitative interviews and longitudinal, can provide a greater understanding of athletes' subjective experiences as well as temporally link psychosocial variable to eating disorder outcomes.

Qualitative findings have supported the importance of the psychosocial variables, in particular pressures, highlighted in the Petrie and Greenleaf (2007; 2011) model, as well as the relationships among the variables (Arthur-Cameselle & Quatromoni, 2011; Kerr et al., 2006;

Muscat & Long, 2008). For example, in a mixed-methods design including a sample of 95 Canadian female gymnasts between the ages of 11 and 20 years, researchers asked open-ended questions to assess factors influencing body image and eating behaviors (Kerr et al., 2006). The researchers found that athletes who had heard or experienced sport-specific pressures (i.e. negative body comments) were significantly more likely to say that they recorded food intake and weight, restricted food intake, and engaged in self-induced vomiting compared to those who had not experienced sport-specific pressures. Additionally, 13% reported currently having an eating disorder or disordered eating, and 29% reported previously having an eating disorder or disordered eating (Kerr et al., 2006). In a similarly designed study, Muscat and Long (2008) conducted a content analysis of open-ended responses from a sample of 223 female collegiate athletes and sport participants (i.e., women who were participating in casual, intramural, or recreational sports). They reported that 48% of the sample endorsed having received critical (i.e., negative) comments about body and appearance that originated from multiple sources (e.g., family, coaches, trainers); the athletes indicated that they connected these comments to the development of their disordered eating behaviors.

Researchers have conducted several longitudinal studies to identify the temporal relationships among psychosocial factors and ED symptomatology and determine if they are true risk factors (i.e., causal relationships; Anderson et al., 2012; Doughty & Hausenblas, 2005; Krentz & Warschburger, 2013; Voelker et al., 2016). For example, Krentz and Warschburger conducted a 1-year longitudinal study with a sample of 38 adolescent female athletes sampled from elite sport schools and Olympic training centers. Using surveys comprised of self-report questionnaires, they assessed disordered eating (EAT-26), emotional distress resulting from missed exercise sessions (via the Emotional Element of Exercise subscale of the Obligatory

Exercise Questionnaire; Pasman & Thompson, 1988), sports-related body dissatisfaction (via the Contour Drawing Rating Scale [CDRS]; Thompson & Gray, 1995), desire to be leaner to improve sport performance (Drive for Thinness and Performance scale; Hinton & Kubas, 2005), and social pressures from the sport environment. Although they found no significant change in disordered eating behaviors, they determined that the desire to be leaner in order to improve sport performance was predictive of disordered eating one year later (Krentz & Warschburger, 2013). In a similar study, Anderson et al. (2012) surveyed 325 female collegiate athletes on measures of sport pressures (WPS), body satisfaction (BPSS-R), and dietary restraint (Dietary Intent Scale [DIS]; Stice, 1998b) over the course of a 5-month competitive season. Using cross-lagged panel analyses, they determined that sport pressure and dietary restraint remained stable over time, and that pressures in the sport environment regarding weight and appearance at Time 1 predicted decreased body satisfaction at Time 2.

Using the same sample as Anderson et al. (2012), Voelker et al. (2016) explored the within-variable stability and prospective cross-lagged pathways between psychosocial factors of body satisfaction, negative affect (i.e., anger, sadness, guilt), intentions to engage in dietary restraint, and bulimic symptomatology. They found that stability coefficients were the highest (i.e., showed little change across time points) for intentions to engage in dietary restraint and bulimic symptomatology. Additionally, greater body satisfaction at Time 1 predicted a decrease in negative affect at Time 2, greater bulimic symptomatology at Time 1 predicted a decrease in body satisfaction at Time 2, and higher levels of negative affect at Time 1 predicted lower intentions to restrict diet at Time 2. With respect to the last finding, the authors hypothesized that athletes may have coped with negative affect through emotional eating or bingeing, rather than engaging in dietary restraint. Finally, Doughty and Hausenblas (2005) examined the eating

disorder correlates of body dissatisfaction, perfectionism, drive for thinness, and social physique anxiety across a six-month period in a sample of 72 female Division I collegiate gymnasts. Although they did not relate psychosocial correlates to the athletes' symptoms of disordered eating, their findings indicated that body dissatisfaction and drive for thinness remained relatively stable across the competitive season (Doughty & Hausenblas, 2005).

Summary

Researchers have demonstrated that female athletes have similar experiences as female non-athletes regarding the presence of general sociocultural pressures, and have established the importance of sport-environment pressures in terms of understanding athletes' body image concerns and disordered eating behaviors (Brownell, 1991; Muscat & Long, 2008; Reel et al., 2010; Rodin & Larson, 1992). These pressures and the ubiquity with which they are experienced by female athletes have been shown to contribute to increased internalization of (i.e., belief in) socially defined standards of beauty, which contributes to increased body dissatisfaction (e.g., Anderson et al., 2011). In turn, body dissatisfaction, which has been identified as a causal risk factor in the onset of disordered eating (Stice, 2002), leads to disordered eating symptomatology via both direct and indirect pathways (i.e., through negative affect and/or dietary restraint; Anderson et al., 2011). Taken together, these factors form a sociocultural model of disordered eating that uniquely reflects the experiences of female athletes (Petrie & Greenleaf, 2007, 2012). Empirical tests of the relationships among the factors have yielded support for parts of the model (e.g., Petrie et al., 2009a, 2009b) as well as the model in its entirety (Greenleaf et al., 2010; Anderson et al., 2011). Thus, the temporal progression of these factors provides justification for prevention and intervention efforts aimed at reducing the preceding risk factors in order to, ultimately, reduce ED symptomatology.

Eating Disorder Prevention for Athletes

Eating disorder (ED) prevention is widely recognized as a necessary public health goal (Paxton, 2000), and ED prevention programs have been found to be effective at reducing the risk of developing ED symptoms (Stice & Shaw, 2004; Stice et al., 2007) among female athletes (e.g., Bar et al., 2016) and non-athletes (e.g., Stice & Shaw, 2004; Stice et al., 2000). Prevention is defined as interventions that occur prior to the initial onset of a disorder meeting clinical diagnostic criteria (Muñoz et al., 1996), and prevention initiatives that target a subgroup of the population at risk of developing an eating disorder (e.g., female athletes) are known as *selective prevention* interventions (Le et al., 2017).

Although a variety of different types of ED interventions have been developed and tested (e.g., psychoeducational, cognitive-behavioral; Yager & O'Dea, 2008), cognitive dissonance-based interventions have been found to be consistently effective across studies (Yager & O'Dea, 2008; Watson et al., 2016; Le et al., 2017). Cognitive dissonance theory (Festinger, 1957) posits that the possession of inconsistent beliefs (i.e., inconsistency between two beliefs, or between beliefs and behaviors) creates psychological discomfort (i.e., dissonance) that will motivate people to change either their attitudes or behaviors to restore consistency and reduce discomfort. To develop cognitive dissonance, individuals are persuaded to act contrary to a previously held belief (Leippe, 1994); however, it is important for individuals to believe they have autonomously and voluntarily adopted the counterattitudinal stance, otherwise they will attribute their inconsistent behavior to an external source (e.g., the instructions or requirements of the program). For example, within ED prevention programs, women who have adopted the thin-ideal may be asked to take a stance against it by helping design a program to help high school girls avoid adopting the thin-ideal (Stice et al., 2000). Dissonance-based approaches have

achieved consistent success in reducing thin-ideal internalization, body dissatisfaction, dieting, and disordered eating behaviors among female university students (Becker et al., 2005; Green et al., 2005; Roehrig et al., 2006; Stice et al., 2000; Stice, et al., 2003).

The earliest documented efforts to prevent EDs in athletes were published by Baer et al. (1995). In their study, sport (e.g., athletic trainers) and mental health (e.g., psychologists) professionals assessed, monitored, and provided support and education to 12 at-risk athletes, with the goal to increase the athletes' awareness of appropriate nutrition to support health and physical performance, as well as to decrease the incidence and severity of disordered eating. Although the outcome measures they used in their study were not specified, athletes reported that they found the information useful and the treatment team indicated that they had success in modifying the athletes' dietary behaviors (i.e., increased carbohydrate consumption; Baer et al., 1995). In 2000, Abood and Black conducted an 8-week psychoeducation intervention for female athletes (n = 70) who were drawn from seven different sports. During the intervention, athletes received education about health-promoting behaviors and attitudes via didactic and experiential methods across four content areas: (a) self-esteem, (b) performance pressure, (c) nutrition knowledge and beliefs/myths about nutrition related to athletic performance, and (d) stress management. Outcomes were assessed at pre- and post-intervention using the Eating Disorders Inventory-2 (EDI-2; Garner et al., 1983), Sport Competition Anxiety Test (SCAT; Martens et al., 1990), Rosenberg Self-Esteem Scale (RSES; Rosenberg, 2015), and the Self-Rating Anxiety Scale (SAS; Zung, 1971). Findings yielded significant decreases in Drive for Thinness and Body Dissatisfaction (EDI subscales) as a result of the intervention, and the authors suggested that the intervention process (i.e., athletes gathering together to learn from and interact with one another

about health issues) may have been equally as impactful as the intervention content (i.e., information; Abood & Black, 2000).

Similarly, an evaluation of the BodySense project (Buchholz et al., 2008) in a sample of 62 (intervention $n = 31$; control $n = 31$) female gymnasts ages 11 to 18 years showed that the program had a modest positive effect on athletes' perceptions of pressure to be thin within their sport. The BodySense project is a 3-month selective, primary, positive body image program that presents workshops focused on health, eating attitudes and beliefs, respecting the uniqueness of body size and shape, resisting pressures to diet, engaging in physical activity for enjoyment, helping athletes feel good about themselves, modeling positive body attitudes and behaviors, balancing sport participation and life outside of sport, and stress management and self-esteem in the sport context. Athletes completed self-report surveys assessing pressures to be thin in the sport environment, body esteem, eating attitudes and behaviors, internalization, and self-efficacy over dieting pressure at pre- and post-intervention (Buchholz et al., 2008). However, the positive results of both of these studies (Abood & Black, 2000; Buchholz et al., 2008) were limited due to lack of long-term follow-up (Bar et al., 2016).

In a similar study that conducted a follow-up evaluation, Doyle-Lucas and Davy (2011) tested the Nutrition for Optimal Performance program in a sample of 231 adolescent female dancers. The program provides education about sport nutrition and encourages healthier dietary habits via increased self-efficacy using a brief multi-session DVD format (Doyle-Lucas & Davy, 2011). The initial evaluation of this program, which was conducted via administration of a sports nutrition knowledge and behavior questionnaire as well as a food frequency questionnaire, showed increased nutritional knowledge, self-efficacy related to dietary behaviors, and perceived susceptibility to the female athlete triad (i.e., increased awareness of risks and consequences

associated with the female athlete triad) among the athletes; however, declines in self-efficacy and awareness of consequences of the female athlete triad were observed at six-week follow-up (Doyle-Lucas & Davy, 2011).

In the first study to test a cognitive dissonance based intervention with female athletes, Smith and Petrie (2008) expanded the work of Stice et al. (2000) by comparing a three-session cognitive dissonance program with a three-session healthy weight program and a wait-list control to determine the relative efficacy of these interventions for reducing internalization, body dissatisfaction, negative mood, bulimic symptoms, and dieting behaviors. Twenty-nine NCAA Division I athletes were recruited from different sports (e.g., volleyball, tennis, softball) and assigned to one of the three conditions. Both the healthy weight program and the cognitive dissonance program consisted of three 1-hour meetings over three consecutive weeks, each of which consisted of an educational component, activity/practice, discussion, review of homework from the previous session and assignment of homework for the upcoming week. Each intervention group was facilitated by advanced doctoral students in counseling psychology, and participants completed baseline questionnaires of internalization, body satisfaction, negative affect, and disordered eating pre- and post-intervention (Smith & Petrie, 2008).

In the dissonance intervention, athletes were told that the program was designed to help high school athletes understand and avoid body image problems, and were provided information about the thin-ideal and the impact of thin-ideal messages from various sources (e.g., media, peers). Participants completed an essay about the costs of pursuing the thin-ideal, identified positive qualities about themselves while standing in front of a mirror, and practiced role plays to argue against the pursuit of the thin-ideal. Participants identified and engaged in behaviors to resist the thin-ideal, anticipated challenges related to resisting the thin-ideal, and strategies for

successfully overcoming those challenges. In the healthy weight intervention, participants were informed the sessions were designed to develop better attitudes towards eating, their bodies, and sport performance. Participants were provided information about the healthy ideal, energy balance, and nutrition and asked to keep a food and exercise log throughout the program. Participants also discussed nutrition and diet myths as well as the role of exercise in a healthy lifestyle. In the last session, participants discussed the benefits of obtaining a healthy ideal and relapse prevention techniques (Smith & Petrie, 2008).

Although findings indicated that female athletes who participated in the cognitive dissonance intervention did not experience significant reductions in any of the psychosocial risk factors compared to the healthy weight group or wait-list control, post hoc analyses indicated limited positive effects. Specifically, those in the cognitive dissonance intervention showed decreased sadness/depression and internalization, as well as increased body satisfaction after the intervention compared to baseline. Additionally, the dissonance group was the only one to not show more negative symptoms (e.g., increased internalization) during the three-week intervention (Smith & Petrie, 2008). The authors note several limitations, including the paradoxical relationship between the thin-ideal and the sport-ideal, consonant explanations (i.e., being told by coaches to meet with researchers), and small sample size; however, findings suggest that cognitive dissonance programs hold promise for helping female collegiate athletes reduce psychosocial factors that contribute to disordered eating symptoms (Smith & Petrie, 2008).

Expanding on Smith and Petrie (2008), Becker et al. (2012) recruited all female athletes (N = 168) from a Division III athletic department to participate in either an athlete-modified dissonance-based program or an athlete-modified healthy weight (i.e., focused on encouraging

small lifestyle modifications for healthy weight maintenance) intervention; each intervention took place over three, 60-80 minute sessions. Half of each athletic team was randomly assigned to each intervention group, and surveys assessing internalization, bulimic symptomatology, dietary restraint, negative affect, and body dissatisfaction were administered at four time points: pre-intervention, post-intervention, 6-week follow-up, and 1-year follow-up. The dissonance-based and healthy weight protocols closely mirrored those developed by Stice and Presnell (2007) and implemented by Smith and Petrie (2008) with the addition of athlete-specific modifications (e.g., discussion of body image pressures placed on athletes in their specific sport, making role plays and language sport-specific, information about the female athlete triad). Of note, unlike other intervention studies (e.g., Smith & Petrie, 2008) the facilitators of each intervention group were the athletes' peers (i.e., other female athletes at the university). The results indicated that both dissonance-based and healthy weight programs significantly reduced all psychosocial variables (e.g., body dissatisfaction) at 6-week follow-up, and significant effects remained at 1-year follow-up for negative affect, bulimic pathology, and shape concerns. Although these findings were limited by the lack of a wait-list control group and homogeneity of the sample (i.e., all participants were female athletes from one university; Bar et al., 2016), they represent the first study to find significant effects of an ED prevention program on risk factors among female athletes after one year (Becker et al., 2012).

Additional literature demonstrates that positive intervention effects may continue for athletes long-term (Bar et al., 2017; Elliot et al., 2008; Piran, 1999). Elliot et al. (2008) tested the effects of a prospective randomized harm reduction/health promotion program among female high school athletes both immediately post-intervention and long-term (i.e., 1 to 3 years post-graduation). Although not explicitly described as a dissonance-based intervention, the

curriculum (i.e., eight 45-minute sessions) included components that closely mirrored those found in other dissonance-based ED prevention programs, including deconstructing and remaking media advertisements for nutritional supplements to counter media influences, and presenting a public service campaign to teammates to discourage disordered eating behaviors. Immediately post-intervention, results showed significant decreases in pathogenic weight control behaviors (e.g., diet pill use), less belief in the media, and healthier eating behaviors; reductions in ED behaviors (e.g., self-induced vomiting, use of diet pills/diuretics/laxatives) among female athletes remained significant at follow-up (Elliot et al., 2008). Piran (1999) implemented a multifaceted ED prevention program during a 10-year period (i.e., 1986 to 1996) at a professional ballet school, and surveys were conducted to evaluate the program at three different time points: 1987 (baseline), 1991, and 1996. Outcome measures included the Diagnostic Survey for Eating Disorders (DSED; Johnson, 1987), the EAT, and the EDI. The prevention program aimed to identify and implement systemic changes within the school to create an environment where students felt comfortable with puberty and physical growth, and felt safe and positive in their diverse bodies. With that purpose in mind, the primary researcher conducted small focus groups (6-20 individuals of the same gender and age) approximately 2-10 times annually to discuss their experiences with body shape and weight preoccupation and identify opportunities for systemic changes at the school. The primary researcher subsequently advised school officials to implement proposed changes to reduce weight and shape preoccupation; changes included replacing the emphasis on body shape with an emphasis on body stamina/conditioning, removing weight scales, prohibiting teachers from making evaluative comments about students' body shape, and introducing a staff member who could be contacted by students with concerns about body shape. Survey results collected at three time points

showed significant improvements in eating attitudes and behaviors (e.g., food restriction, bingeing, laxative use) and an increase in healthy eating habits and attitudes towards the body as a result of the systemic changes (Piran, 1999).

Bar et al. (2017) conducted a 15-year follow-up study of Piran's (1999) prevention program with 116 female dancers who had graduated from the school prior to, during, and after the implementation of the program. The sample was divided into three cohorts: those who graduated 1980-1989 (considered pre-intervention), 1990-1999 (intervention), and 2000-2009 (post-intervention); all participants were given the same questionnaires administered in Piran's (1999) original study (i.e., DSED, EAT, and EDI) and results were compared across the three cohorts. Although the researchers hypothesized that the intervention cohort (i.e., 1990s) would report lower scores than the pre- and post-intervention cohorts, results indicated that intervention and post-intervention participants (i.e., those who participated in the original ED prevention program or attended the ballet school after the intervention and subsequent school-wide modifications regarding body shape and weight) reported lower rates of ED symptomatology and extreme weight loss behaviors (e.g., laxative use, self-induced vomiting), with the lowest scores belonging to the cohort of participants who attended the school post-intervention (Bar et al., 2017). These findings suggest selective prevention programs can effectively reduce ED symptomatology among athletes long-term.

Summary

Several ED prevention programs have been developed and tested among samples of female athletes (e.g., Becker et al., 2012; Smith & Petrie, 2008), many of which have been adapted and modified from programs found to be effective among female non-athletes (e.g., Stice et al., 2000). Research indicates the most effective prevention programs are those that are

primary, selective, experiential, multi-session, group-based, and implemented by a professional in a related field (i.e., sport psychology consultant; e.g., Stice et al., 2007; Bar et al., 2016). Additionally, dissonance-based (Festinger, 1957) prevention programs have shown consistent effectiveness in reducing ED symptomatology and its antecedent risk factors (e.g., internalization; Voelker et al., 2019); however, researchers have argued that these effects are small to moderate (Le et al., 2017) and previous studies have been limited by lack of follow-up or brief duration of follow-up (e.g., Buchholz et al., 2008) and other methodological issues (e.g., small sample size, lack of wait-list control; Becker et al., 2012; Smith & Petrie, 2008). Additional research to explore the potential effect of other psychological interventions (e.g., mindfulness) as well as the long-term effects of ED prevention programs to identify the most effective methods for reducing ED risk factors and symptomatology among female athletes.

Bodies in Motion

Bodies in Motion (BIM) is a prevention program designed to address the unique experiences of female athletes and their body image. Through the program, athletes develop a positive body image and increased appreciation for and satisfaction with the appearance and functionality of their bodies as both athletes and as women which, ideally, promotes a healthier relationship with food and eating (Tylka, 2011). The program also emphasizes developing healthier and more functional ways of responding to ubiquitous pressures (i.e., general sociocultural, sport-specific) that female athletes face. Grounded in cognitive dissonance theory (Festinger, 1957) and mindful self-compassion principles (Neff, 2003b; Germer, 2009), BIM offers opportunities for female athletes to actively and experientially challenge societal appearance standards with one another, while also addressing body, appearance, and performance standards that within the sport environment. Expanding from purely dissonance-

based interventions, BIM utilizes mindful self-compassion exercises to help athletes increase awareness of their thoughts, feelings, and reactions to appearance expectations and cope with these messages more effectively. This awareness is increased as athletes learn how to become more present-focused, nonjudgmental of their internal reactions, and kind and compassionate towards themselves (as opposed to self-critical) when exposed to appearance messages. Evaluations of mindfulness-based ED prevention programs have yielded promising results in samples of female non-athletes, including reductions in weight and shape concern, dietary restraint, thin-ideal internalization, eating disorder symptoms, and psychosocial impairment (i.e., the impact of eating pathology on personal, social, and cognitive functioning) at 6-month follow-up (Atkinson & Wade, 2015).

BIM also incorporates the positive elements of social media (i.e., platform tailored to the audience, content specific to the program, social support; Korda & Itani, 2013). Through an online platform, participants have the opportunity to interact with each at any point during the day, provide mutual support as they practice the strategies taught in each session, contribute content that challenges societal beauty standards and affirms their current bodies as athletes and women, and promote a culture of body acceptance that goes beyond the time spent in session.

BIM is guided by female professionals (i.e., licensed sport psychologists, sports dieticians, athletic trainers, advanced doctoral students in these fields), all of whom complete a standardized Program Leader training. The program is comprised of a 45-minute introduction session followed by four 75-minute sessions led by Program Leaders; groups are comprised of 5-8 female athletes. In the introductory session, participants engage in an icebreaker activity to increase familiarity, discuss participation expectations, and join the social media platform. In Session 1, athletes continue building relationships with other participants and discuss the

definition and origin of societal beauty ideals. Female athlete body duality and expectations and pressures regarding appearance within the sport environment are also discussed. Athletes are introduced to mindfulness as a perspective for managing their thoughts and feelings regarding the body pressures they face, and then are given the opportunity to practice mindful breathing so they can learn how to use their breath as a centering/grounding tool. Homework to be completed prior to Session 2 includes noticing internal (i.e., self-talk) and external messages communicated about physical appearance and worth as women and athletes, engaging in a 5-10-minute mirror exercise in which each athlete looks at her body in a mirror and notices her thoughts and feelings regarding her body, and continuing to practice mindful breathing.

In Session 2, athletes discuss their experience with the homework assignments, identify comments (i.e., self-statements and comments from others about physical appearance and worth as women and athletes) that are potentially triggering for negative emotions and behaviors related to their bodies, and learn about (and practice) self-compassion. Athletes practice giving and receiving positive affirmations about their bodies and engage in mindful walking as another way to increase body awareness and present-moment focus and manage body-related expectations and negative body attitudes. Homework to be completed prior to Session 3 includes sharing on the social media platform body-related messages about women they have heard, using self-kindness statements to respond to themselves, and practicing mindful walking. In Session 3, athletes discuss their experiences with the homework and the psychological costs associated with societal and sport-specific ideals. How athletes typically respond to these ideals are explored and athletes practice being self-compassionate and learn ways to manage sport and societal pressures, such as using mindfulness or engaging in body activism (e.g., not wearing makeup) to counter media messages about beauty and appearance. Athletes are introduced to grounding

through the use of an external object (i.e., stone) and learn a third mindfulness exercise that combines mindful breathing with a self-compassion-based imagery exercise. Session 3 homework includes engaging in the mindfulness exercise, practicing a behavior to manage and refute body-related pressures from society and sport (e.g., prepare meals according to the energy and nutrients needed to fuel activity rather than beliefs about how much food should be consumed as a woman), and writing or recording a brief celebration of the female athlete body to be shared in the final session. In Session 4, athletes share and discuss their body activism and body celebration exercises during the previous week. Additionally, athletes re-engage with their bodies during an in-session mirror exercise while utilizing self-compassion techniques to modify how they evaluate their bodies, and learn a self-compassion mantra (Neff, 2003b) to self-care, particularly during times of distress. Finally, athletes discuss how knowledge and skills learned can transfer to other life domains and commit to continued body activism and celebration with one another through the social media platform. At the end of Session 4, athletes are invited to join an additional exclusive online social media platform comprised of female athletes who have previously completed the program as a source of continued motivation and connection to the material.

Recently, Voelker et al. (2019) conducted an initial evaluation of the effectiveness of the BIM program for reducing general sociocultural and sport-specific pressures, internalization, body dissatisfaction, negative affect, dietary restraint, and ED symptomatology. This study represents the first to test a mindfulness-based ED prevention program in a sample of female athletes. Their sample consisted of female collegiate athletes from nine NCAA member university athletic departments across the U.S. as well as a wait-list control group, addressing limitations of previous studies (e.g., Becker et al., 2012). Results of repeated measures

ANOVAs yielded only significant reductions in internalization at both post-test and 3-4-month follow-up; however, lack of significant findings may be attributed to the small sample size. Although not statistically significant, group differences in response trajectories over time were observed (i.e., the trajectories for the intervention and control groups crossed and demonstrated the expected variability) for body appreciation, body satisfaction, shape and weight concerns, negative affect, bulimic symptomatology, muscular-ideal internalization, positive affect, and sport-specific body pressures. Therefore, as the authors note, additional evaluation of the BIM program across more sites and more athletes may yield more robust findings and verify findings from the initial evaluation (Voelker et al., 2019). Most recently, in a qualitative evaluation of the Bodies in Motion program with a sample of female athletes, Voelker et al. (2020) asked participants the following two open-ended questions: (1) "What are the two most meaningful things you have learned from your participation in the Bodies in Motion program? (2) What are the two most important ways you see your body differently after having participated in the Bodies in Motion program? Athletes provided responses immediately post-intervention and at 3-4-month follow-up. Using thematic analysis through a social constructivist lens (Creswell & Poth, 2018), researchers identified three overarching themes: becoming aware; changing attitudes toward self and body; and developing new skills and ways of relating to the self. Within the first theme, the following subthemes were identified: recognizing the value of body function versus appearance; realizing they are not alone and have other women to support them; understanding that beauty is socially constructed and communicated; and being aware of the magnitude of self-criticism. Within the second theme, the following themes were identified: loving, accepting, and appreciating self and body; viewing body as unique and beautiful; being more confident and comfortable with body; and awareness of being more than body. The

subthemes identified in the third broad theme were: ability to counter body negativity and be more body-positive; more present and mindful; kinder and more compassionate toward body and self; and ability to suspend judgment of other bodies and avoid body comparison. These findings suggest that the program was effective for changing the athletes' attitudes toward their body helping them to develop new ways of relating to themselves, which may be helpful for disrupting the psychosocial factors that contribute to the onset and maintenance of disordered eating among female athletes.

Summary

Although the research on the effectiveness of ED prevention programs with athletes is in its infancy and relatively limited, initial studies suggest that such programming may be effective at reducing risk factors (i.e., internalization, body dissatisfaction, negative affect) associated with EDs (Bar et al., 2016). A recent qualitative analysis (Arthur-Cameselle et al., 2017) has recommended that prevention programs address the body duality (i.e., feminine ideal body contrasted with the athletic ideal body; Krane et al., 2004) uniquely experienced by female athletes. Bodies in Motion has incorporated these recommendations into the curriculum, but also expanded beyond dissonance-based protocols to incorporate mindful self-compassion elements to increase kindness and positive regard towards themselves as they navigate the challenges of being both female and athlete. Initial quantitative and qualitative examinations of the program have yielded promising findings at post-intervention and 3-4-month follow-up. What remains missing from the evaluation of this program is an exploration of its long-term effects, such as two to three years post-intervention, which may then include athletes who have transitioned to sport retirement.

Sport Retirement and its Impact on Body Image

Training and exercise are important components of athletes' daily lives (Durand-Bush & Salmela, 2002), and are often cited as reasons for life satisfaction (Loland, 1999). Furthermore, sport achievement and the feeling of being athletically competent have been shown to contribute to subjective well-being and life satisfaction among athletes (Saint-Phard et al., 1999; Werthner & Orlick, 1986). Thus, many athletes never visualize life without training and competing (Ungerleider, 1997). As a result, transition to sport retirement can have negative repercussions, including decreased self-confidence (Werthner & Orlick, 1986) and mental health problems (Menkenhorst & Van Den Berg, 1997) for this population.

In addition to the general life stressors that sport retirement entails (e.g., identity issues, support networks, career planning), it represents a transition to a more sedentary professional position and lifestyle that is marked by a reduction in training and dysregulation of eating habits that often results in weight gain, degradation of physical capabilities, fatigue, and loss of muscle mass (Drahota & Eitzen, 1998; Koukouris, 1991; Wylleman et al., 1993). Therefore, even if retired athletes maintain an exercise regimen, a substantial discrepancy between sport training activity and post-retirement exercise remains (Chamalidis, 2000), which may lead to weight gain and loss of musculature and fitness. Such changes in body size/shape and physique status can lead athletes to become worried about and preoccupied with their bodies, and ultimately dissatisfied with themselves and their appearance (Stephan et al., 2007) despite the absence of sport-specific pressures to maintain a certain body size/shape (e.g., Anderson, et al., 2011).

Qualitative research has shown that athletes, especially female athletes, may struggle with eating concerns and body image after retiring from sport (Kerr & Dacychyn, 2000; Stirling et al., 2012; Warriner & Lavallee, 2008). Stirling et al. (2012) conducted 30-90-minute semi-

structured interviews with eight retired (i.e., 1-6 years post-retirement) elite gymnasts to explore their perceptions of the influence of sport retirement on their body image and weight control behaviors. Findings indicated that the most prominent themes from the interviews were distressing changes in body composition (i.e., weight gain, loss of muscle mass), increased body dissatisfaction (i.e., negative body image, negative affect), and attempts to lose weight (counting calories, excessive exercise, food restricting behaviors; Stirling et al., 2012). Specifically, all eight participants reported increased body dissatisfaction as a result of post-retirement changes in body composition, increased negative body image and affect (i.e., "I feel bad about myself and my body"), and guilt about their changed body composition. These results extended the previous research by identifying specific maladaptive weight control behaviors (Bonci et al., 2008) that may be associated with disordered eating or clinical eating disorders (APA, 2013). Similarly, Stephan & Bilard (2003) conducted interviews to complement quantitative data regarding the impact of sport retirement on body image in a sample of 16 French Olympic mixed-sport male (n = 8) and female athletes as they transition to retirement. Qualitative results indicated the retired athletes were aware of deterioration in their physical capabilities and increased somatic symptoms (i.e., physical tension), which supported and further explained quantitative findings of decreased body satisfaction.

In exploratory interviews with retired female athletes, Greenleaf (2002) found that current thoughts and feelings about their bodies were based on their former competitive athlete bodies. Participants reported comparing their current body with their athlete body, which was responsible for much of the body dissatisfaction they experienced. These findings are consistent with Kerr & Dacyshyn (2000), who conducted in-depth interviews with athletes retired for up to five years to explore their thoughts, feelings, and self-perceptions during their careers and

throughout the retirement process. Findings indicated that retired female gymnasts experienced long-lasting preoccupation with body image and weight, which, for some, led to the development of disordered eating habits and eating disorders in retirement (Kerr & Dacyshyn, 2000).

Three recent publications have explored retired female athletes' thoughts, feelings, and behaviors in relation to food, exercise/physical activity, and body image (Papathomas et al., 2018; Plateau et al., 2017a, 2017b) in a large study of 218 former NCAA Division I female gymnasts and swimmers. In the first publication, Plateau and colleagues (2017a) used closed- and open-ended survey questions to explore current exercise attitudes and behaviors. Despite a range in years since retirement (i.e., 2-6 years), the findings suggested there was no relation between years since retirement and current exercise frequency, type of exercise, or reason for exercising. Open-ended questions asked retired athletes to describe the changes in their physical activity levels and how they have felt about those changes as well as how they have coped with the changes. The results of an inductive thematic analysis yielded three themes: (1) finding new meanings in exercise; (2) negotiating exercise independence; and (3) repositioning exercise in a broader life context (Plateau et al., 2017a). In contrast to the time-consuming and tiring training during their competitive careers, post-retirement exercise was perceived as fun and flexible; however, the freedom to make personal decisions regarding exercise afforded by sport retirement resulted in some athletes endorsing difficulty motivating themselves to exercise. Additionally, results indicated retired athletes struggled to balance exercise with broader life demands (e.g., occupational, social) and worried about the impact of reduced exercise on their body shape and weight, which was linked to identity and self-worth (Plateau et al., 2017a).

In the second publication, Plateau and colleagues (2017b) conducted an inductive and deductive thematic analysis of open-ended survey questions to explore the eating practices and

coping strategies of retired female athletes. Because the initial inductive analysis revealed themes related to intuitive eating (Tribole & Resch, 2012; Tylka, 2006), a subsequent deductive analysis was employed to explore themes according to that framework (i.e., eating based on physiological hunger and satiety cues instead of situational and/or emotional cues), which identified three broad themes: (1) permission to eat; (2) recognizing internal hunger and satiety signals; and (3) eating to meet physical and nutritional needs. The findings indicated that athletes felt free and able to eat what they wanted, as well as less constrained by diets and coaches' expectations. This was accompanied by a subsequent realization that their eating practices in retirement were healthier and pathogenic behaviors (e.g., bingeing) had lessened, which contrasts previous research that has suggested an increase in disordered eating practices among retired female athletes (e.g., Kerr et al., 2006; Ogden & Steward, 2000; Stirling et al., 2012). Following retirement, female athletes reported an effortful process of rebuilding their mindsets (i.e., trust, confidence) related to food and eating, and reinterpreting hunger and satiety cues to eat more adaptively (i.e., fueling bodies with healthy food to meet energy demands).

The third publication conducted a thematic analysis of closed- and open-ended questions to examine changes in body image perceptions since leaving sport retirement (Papathomas et al., 2018). Despite 74.3% of the sample believing themselves to be of normal weight, 55.0% reported dissatisfaction with their weight and 59.6% reported trying to lose weight. Athletes who endorsed body weight and/or composition changes since retirement were asked to describe the changes that have occurred, as well as how they have felt about and coped with the changes. The findings from these questions yielded four core themes: (1) a move towards the feminine ideal; (2) feeling fat, flabby, and ashamed; (3) continued commitment to a former self; and (4) conflicting ideals: the retired female athlete paradox (Papathomas et al., 2018). These findings

suggest that retired female athletes experience dissatisfaction due to changes in body composition (i.e., reduced muscle tone, increased fat mass), rather than weight, which reflects a more refined level of body consciousness because actual weight may not have changed from competitive career to retirement. Furthermore, retired athletes can dually experience positive feelings (e.g., satisfaction) about their bodies when perceived changes in body composition (i.e., reduced muscle mass) move them closer to the desired feminine ideal. When athletes remain committed to an athletic ideal in retirement, the increasing gap between actual and ideal bodies can lead to pathogenic strategies (e.g., stringent diets, extreme exercise bouts; Stirling et al., 2012) to regain the athletic physique, which are often unsuccessful and can lead to emotional disturbance (Papathomas et al. 2018).

Summary

Sport retirement is a process, and the literature indicates that athletes' reactions to retirement from sport can range from minimal (i.e., not problematic; Coakley, 1983) stressful (Alfermann, 2000; Grove et al., 1997) to traumatic (Grove et al., 1998; Rice et al., 2016). One aspect of sport retirement that can be particularly challenging for former athletes to navigate is learning new ways to relate to exercising (and fitness), eating, and body size, shape, and musculature. Whereas training and sport achievement were once sources of satisfaction (Loland, 1999; Saint-Phard et al., 1999; Werthner & Orlick, 1986), because of the changes that occur in how athletes eat and exercise and in their body composition, they may experience body dissatisfaction and pathogenic weight control behaviors in retirement (Stephan et al., 2007; Stirling et al., 2012) and ultimately an increased risk of eating disorders (Yeager et al., 1993). Additionally, the distress associated with the bodily changes that athletes' experience in retirement can negatively impact broader constructs related to the self, including global self-

esteem and physical self-worth (Stephan et al., 2007). Thus, examining how retired athletes experience their bodies and cope with their transition out of sport remains a necessary area of study.

Purpose

Qualitative methods have been identified as beneficial in sport psychology research due to their ability to increase understanding of how events, actions, and meanings are shaped by the circumstances in which they occur (Dale, 1996; Strean, 1998). As Strean (1998) contends, qualitative inquiry may uncover important questions, processes, and relationships (Marshall & Rossman, 1989) and provide important explanatory cues that can inform subsequent quantitative research. The field of sport psychology has identified the need for effective evaluation of the efficacy of prevention programs, and qualitative methods have been deemed suited to this task as sport is a unique context in which rich, in-depth description can offer the greatest opportunity for insight. In the evaluation of program efficacy, qualitative methods can simultaneously provide details about how a program is working, illustrate what a program has accomplished, and evaluate what has occurred as a result of the program over time within a single research design (Strean, 1998). Underneath the broad umbrella of qualitative methodologies, the combination of semi-structured interviews and content analysis has been identified as the gold-standard in sport psychology (Cote et al., 1993). Additionally, the use of open-ended questions has been recommended to grant athletes greater autonomy over the direction and tone of the interview (Dale, 1996). Although qualitative methods have been effectively applied across a variety of subdomains within the sport psychology literature (e.g., Gulliver et al., 2012), specific areas where it has been applied and can continue to be useful include body image and sport retirement

(e.g., Krane et al., 2001; Kerr & Dacyshyn, 2000), as well as the evaluation of ED prevention programs (e.g., Abood & Black, 2000).

The purpose of the present study is to conduct a long-term qualitative follow-up evaluation of Bodies in Motion, an ED prevention program for female athletes, to examine its effectiveness among a sample of retired female collegiate athletes, as well as explore their current body image, relationships with food and exercise, and psychological well-being after participating in the program and retiring from collegiate sport. Thus, I will use semi-structured interviews, with open ended questions, to examine athletes' perceptions regarding the efficacy of the program, including the specific skills and ways of relating to themselves that continue to be useful for them in the construction of their body image and overall psychological well-being three or more years after they completed the program. The efficacy of the program will be assessed via questions exploring the athletes' current body image, eating attitudes and behaviors, and relationship to exercise and fitness. I also will use open-ended interview questions to assess emotions and coping strategies related to sport retirement, as well as the athletes' perspectives of how their participation in the BIM program may have influenced their transition to sport retirement.

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